

NAVAL AVIATION

NEWS

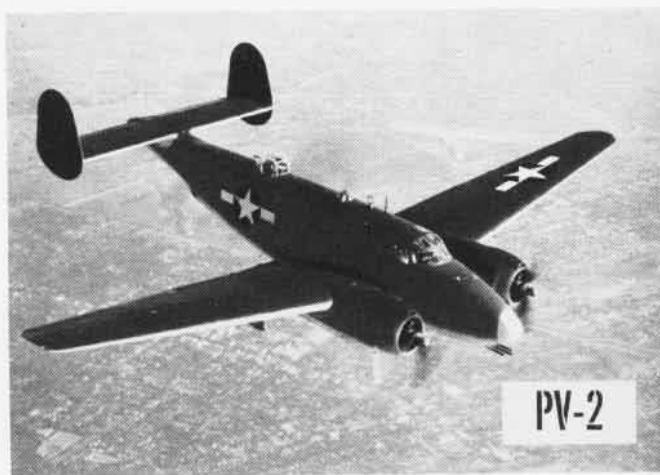
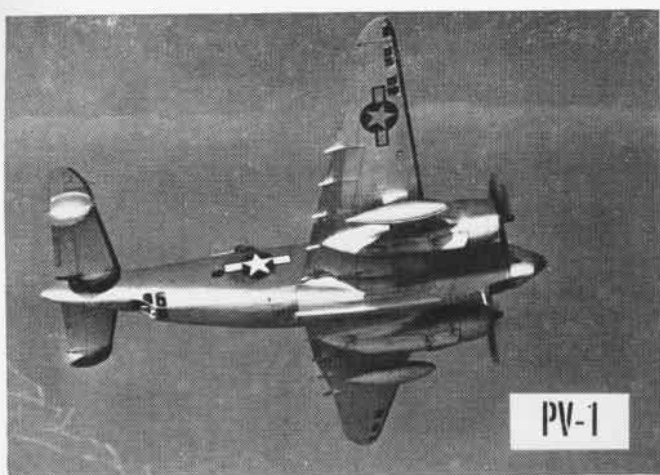


The Navy Neptune
Airstrip Capture
Petulant Porpoise

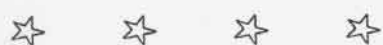
JUNE 1948

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NAVY



TRUCULENT TURTLE, NAVY'S MOST FAMOUS AIRCRAFT, TAKES OFF WITH SHORT RUN BY USING JATO. BELLY STRIPES MEASURE DUMPING OF GAS



NEPTUNE

IF YOU want to know about a new Navy aircraft, ask the pilot who flies one. If it's the P2V *Neptune*, you're thinking about, you don't need to ask—they volunteer the information: It's a whale of a good plane.

Ever since the *Truculent Turtle* set a new world's distance record of 11,236 miles from Australia to Ohio, it has been no secret that the Navy had something in its newest and best patrol plane.

With half a dozen squadrons now flying *Neptunes*, the "word" is filtering out to fleet and shore establishments that it is close to a pilot's dream. It is an easy plane to fly. It handles like a fighter despite its 100-foot wingspan and weight near that of a *Privateer*. It is fast without being "hot" and it can do a lot of things, although its primary mission is patrol. Furthermore, it is one of the most heavily-armed

fighting machines flying today, a veritable sky cruiser.

Although medium landplane squadrons did not begin getting their P2V's until the last year, it is not a postwar airplane. Preliminary designs came out of Vega Aircraft, a subsidiary of Lockheed, back in 1942. Its primary mission then and now is long range day-and-night ASW patrol. Secondary jobs are patrol, photo reconnaissance, mine laying, and night torpedo attack.

It has the greatest radius of any Navy combat plane, by a wide margin. Range can be estimated variously from 5,000 miles to the extreme set by the *Turtle*. That famous plane staggered into the air using JATO to get its 85,000-pound load off the runway at Perth. Fuselage tanks and wingtip tanks helped it set the new non-stop record of 11,236 miles in 55 hours. The old B-29 record was 7,916 miles, Guam to U.S.



New Neptunes at Lockheed show accessibility of nose guns for rearming; three-bladed paddle props on newer models

NEPTUNE POPULAR WITH PILOTS WHO FLY IT IN NAVY SQUADRONS

PILOTS and the plain curious getting their first look at the *Neptune* are struck by its streamlined bulk, its 23' high rudder sticking up like a thumb—a good recognition feature. Its two 2500-hp engines give it almost as much power as the four engines on its cousin, the PB4Y-2 *Privateer*.

Although it is classed as a medium patrol plane, it is almost as heavy as the latter, both being in the 60,000-pound class. It will do things the *Privateer* won't however. Its forward firepower of six 20 mm. guns, 16 HVAR 5" rockets and a couple of 11.75" *Tiny Tim* rockets is the



Cdr. Robinson, CO of VP-ML-7, and Beeby, Preece, Hawkinson, Prater, Vickers, Tomlinson, Cochrane, Lyle, Vreeland

roughest thing in an airplane today, guaranteed to trouble anything from a heavy cruiser on down.

More about the airplane later. Let's talk to some pilots who fly the P2V-2. There is nothing bashful about a pilot when he does not like a new airplane. It's his neck, and he says so in no uncertain language. There have been planes that almost every pilot has been apprehensive about flying. Some have had few words of kindness spoken in their favor. But not so the *Neptune*.

Up at Quonset Point, men of VP-ML-7, one of the first *Neptune* squadrons sound like a bunch of tobacco auctioneers. "I've been in the Navy for 17 years, and during that time I've flown a lot of different aircraft more than 5,000 hours. The P2V is the best all-around airplane I've ever had the pleasure of driving," says Lt. Cdr. J. H. Buffington.

For a time his squadron was VP-HL-9 and flew *Privateers*. Those planes are only three or four thousand pounds heavier, but the *Neptune* can carry more payload, larger bombs, has more firepower, longer range and much more speed.

Eight of the pilots of the old VPB-119 are still with VP-ML-7. These boys have traveled with the outfit from Palawan in the Philippines in 1945 to Samar to Sangley Point, to Miramar on the West Coast and finally to Quonset Point.

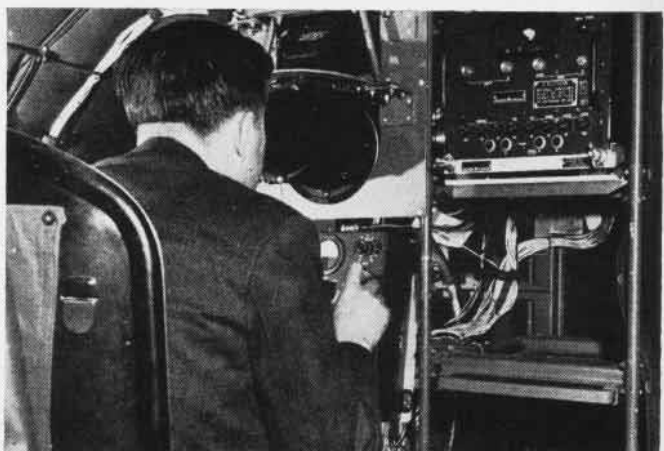
Lt. Cdr. M. R. "Milt" Dahl, one of the old-timers, says: "I like the P2V's single-engine performance. A pilot likes plenty of safety factor in an airplane. During demonstration, the contractor's pilot does a slow-roll with the *Neptune* on one engine. Perhaps that may seem unnecessarily foolhardy, but it means a lot to a pilot who is going to be flying that airplane, even if he never will do that himself. There certainly is no fear of single engine operation here."

Lt. (jg) Jim Kistner, a lad who has sweated out many a long patrol and weather hop in the Pacific, likes the P2V's fuel economy. "You don't have to worry about gas. You can go as far as you want and stay up as long as you like and still come home with enough gas to keep the living room warm all winter."

It must be a good airplane. Ordinarily an outfit that has been equipped with such a rugged and dependable "standby" as the PB4Y-2 would not be too quick to transfer its affections to a relatively new airplane. There are always a few gripes that qualify the feelings about a change in planes, but apparently this feature is one that is lacking in the P2V.

The skipper of ML-7, Cdr. H. E. Robinson, who got around somewhat out in the Pacific back in 1944 with VPB-115, likes the way the P2V has been designed for comfort and ease of operation. "It's an airplane that can easily be flown by one man and fought by one man.

"The gas system is right beside the pilot, and the forward



Neptunes carry plenty of radar and radio gear; this picture shows camera installed for photographing traces on scopes



VP-ML-8 man demonstrates accessibility of rear of *Neptune's* engine for repairs; this feature makes the plane popular

firing guns and rockets give the P2V 'fingertip' fighting control. And a lot of bombs can be carried in that bomb bay."

The opinions voiced around ML-7 aren't all those of old multi-engine pilots who compare the *Neptune* with PBV's and *Liberators*. There are a couple of former fighter pilots who feel much at home in the P2V. They compare it most favorably with their fighters "though it doesn't maneuver quite as well as the old FM-2."

There are some ex-navigators in the group, a couple of lighter-than-air converts, and one displaced Irishman named O'Shea from the surface Navy. He put in some time on the *Bunker Hill*, caught the aviation bug and recently finished flight training. His comment was: "The *Neptune* is definitely more maneuverable than the *Bunker* and the rate of roll is faster. However, I must say in all fairness that the *Bunker* carried slightly more armor and had a little more firepower."

Cdr. P. E. Hartmann, skipper of VP-ML-8, sister squadron to 7, likes the manner in which Lockheed anticipated main-



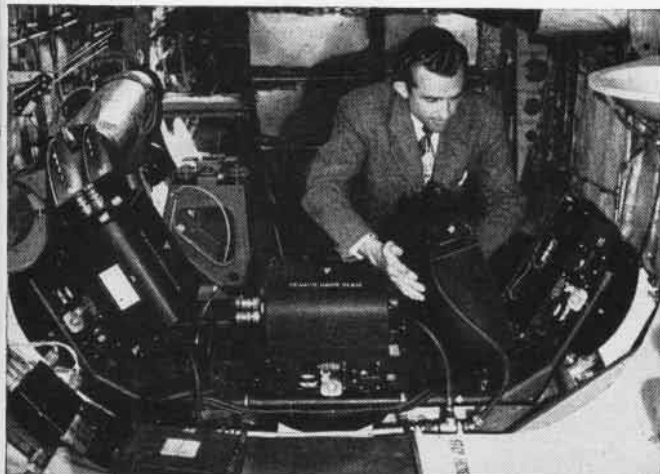
Pilots Kistner and Nicholas of VP-ML-7 demonstrate comfortable seats, convenient control placement in *Neptune* cockpit

tenance problems in the P2V. "The contractor has endeavored to make servicing of the P2V as easy as possible by making ordinarily hidden parts readily accessible.

"For example, no fuel lines, electrical conduits and what-not clutter up the side mount wheel well. All of these lines are routed around the perimeter of the nacelle, leaving the central portion of the fire wall clear. A dzus fastener access door is incorporated in the wall. This leaves the accessory section of each engine, normally one of the most inaccessible spots on many aircraft, readily accessible.

"Almost all accessories can be removed with a speed wrench. In addition, a plywood panel, included with the plane, fits across the wheel well doors, forming a self-contained work stand."

Rearming guns in some planes is a major operation, but the six 20 mm. cannon in the nose are easy to get at. The top half of the fuselage nose lifts up. Ordnancemen can stand right inside the "mouth" and change ammunition cans.



Cameras were installed in roomy after-fuselage of *Turtle* for use on Byrd Antarctic expedition, but R4D's went instead



Two mechanics of VP-ML-7, J. L. Carpenter AD1, and L. G. Judas, ADC, change brake expander tube on wheel of a P2V-2



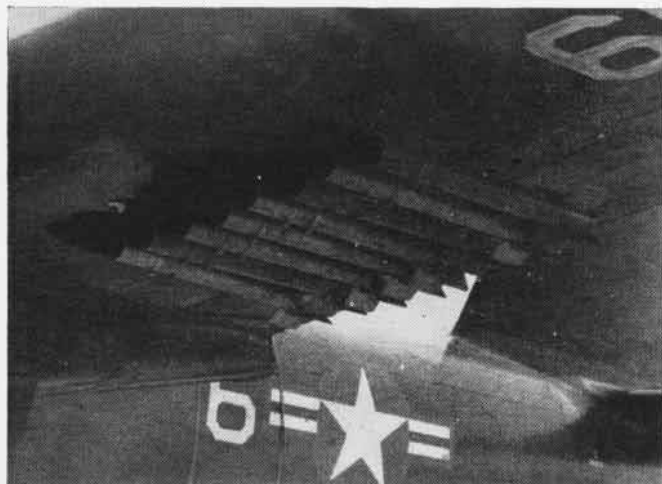
Neptune's predecessor, the PV-1, had good war record; here VPB-128 bombs supply dump in raid on Ranau, Borneo

LONG RANGE, HEAVY FIREPOWER MAKE P2V TOUGH PATROL PLANE

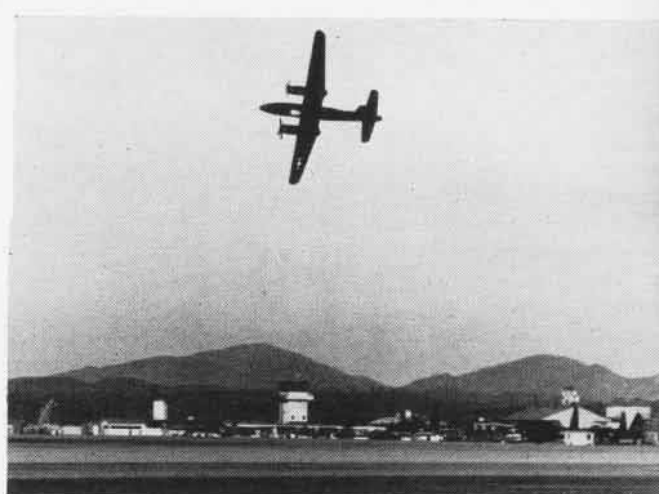
PILOTS of VP-ML-7 and -8 have one minor objection to the *Neptune*. The airplane is a bit too versatile. To check out as a patrol plane commander, the boys have to go through a course of instruction that is a bit broad. Firing and bombing isn't something the ordnancemen have to worry about, but part of the pilot check list.

In the old days the pilot flew the runs, but the crewmen usually dropped the bombs and fired the guns. In the P2V, the pilot has to know fixed gunnery, rocket firing, plus a course in half a dozen different types of ordnance that can be carried, including rockets, depth charges, torpedoes, regular demolition bombs, napalm and what have you. Electronic equipment on the ASW types is enough to confuse the most avid tube-tester. Add this to the usual blinker, code, semaphore, loran, celestial and it requires a lot of training for a pilot.

In drawing up the missions of the Navy, Army and Air Force at Key West recently, Secretary of Defense James Forrestal and the Joint Chiefs of Staff designated anti-submarine warfare as one of the primary functions of the



How would you like to have these 5" HVAR's staring down your throat? The *Neptune* carries 16, and other armament



Long, thin wing and distinctive nacelles make P2V-2 easy to recognize; here it demonstrates fast rate of roll at Miramar

Navy. And on naval aviation falls a large portion of the job. Its planes demonstrated in the last war that long range and striking power were what it took to track down and kill submarines. The P2V figures largely in the Navy air picture; this is demonstrated by the fact it is buying 151 of them from Lockheed.

They can operate from small bases with short runways. They have long range and can carry heavy loads of ASW radar and other detection gear for spotting schnorkel-carrying submarines. An ASW plane must fly safely at slow speeds for better detection and have long endurance. It must fly fast when it meets a submarine—a U-boat can crash dive in 30 seconds from periscope depth. A submarine can fight back with deck guns, so the plane must be maneuverable. The P2V with its high rate of roll and agility of a lighter plane fits well in the picture.

Once a submarine is sighted it must be able to attack hard. There is no more heavily-armed plane flying for this job than the *Neptune*, with its six 20's in the nose, plus 16 rockets under the wings and *Tiny Tims*, bombs, torpedoes or depth charges in the bomb bays.

Let's take a closer look at this airplane that can do all these things. Its 100' wingspan is only 10' shorter than the *Privateer*. Top speed is more than 300 miles, it cruises 31 hours without refueling, with normal non-stop cruise of 5,000 miles. Its two engines turn out 5,000 hp. Wing-



One unique feature of P2V-2 is the varicam tail, which really gives it two elevators and increases its flight maneuverability

loading is around 55 to 60 pounds, although the *Turtle* had 85.5 when it took off.

Rate of roll is 30 degrees a second, compared to 18 degrees for a conventional four-engine bomber. The P2V is the first military airplane equipped with civilian airliner comfort factors—it needs them if it is going to stay up 31 hours. Pilot seats recline. An upholstered bunk behind the cockpit permits a quick nap. An electrically-equipped galley has refrigeration and cooking facilities. Pilots sit ahead of the propellers, a noise-cutting feature, and the plane has sound-deadening insulation throughout.

In addition to its forward firing guns, it carries twin 50's in a top turret and late models have twin 20's in a tail turret. Fully loaded, it can take off with 1400' run—with JATO much less. Stalling speed around 70 knots makes it capable of landing on improvised island strips.

The *Neptune* also has some other interesting features. One is its varicam tail (variable camber), installed for the first time in a Navy plane (see photo, pg 4). It permits varying the curvature or camber of the elevator surfaces, facilitating trimming the plane in flight to allow for shifts in weight and center of gravity. Drooping ailerons in combination with Fowler flaps increase effective flap area.

Nacelles are appreciably smaller than those used for the same engine on superbombers. Dural nacelle armor plate on the *Neptune* gives extra protection to engines in the event of enemy interception. The P2V carries a ton of radio and electronic equipment, including intercom, 10-channel radio, VHF 10-channel transceiver, ADF, range receiver, marker beacon, radio altimeter, Loran, frequency meter, IFF, search radar and radar bomb releasing system.

NAVY patrol planes did not always carry such a load of armament and electronics gear. The early Lockheed planes had considerably less of both, although their speeds were not much greater. The PV-1 *Ventura* had 65' wingspan, weighed 30,000 pounds and had 2,000-mile range. The PV-2 *Harpoon* upped this to 75' span, 32,000 pounds weight and 2,200-mile range. Contrast this with the 100' wings of the *Neptune*, 58,000 pounds weight and 5,000-mile range.

When the Japs hit Pearl Harbor the Navy's total patrol landplane establishment consisted of 20 PBO-1 airplanes diverted from British contracts. This model was the forerunner of the *Ventura* series. The next fall 27 Vega *Venturas* were designated PV-3's. Both the PBO and PV-3 airplanes were rushed into antisubmarine patrol in the Atlantic. The PV-1 and PV-2 actually got into service after the PV-3, the *Ventura* being a high performance, high wingloading plane con-



Six 20 mm cannon in nose of P2V-2 are easily accessible for ordnancemen Vickers and Sokolis of VP-ML-7 to do repairs on

sidered "hot" by many pilots. It was almost on a par with a fighter. The PV-2 had more wingspan and less speed.

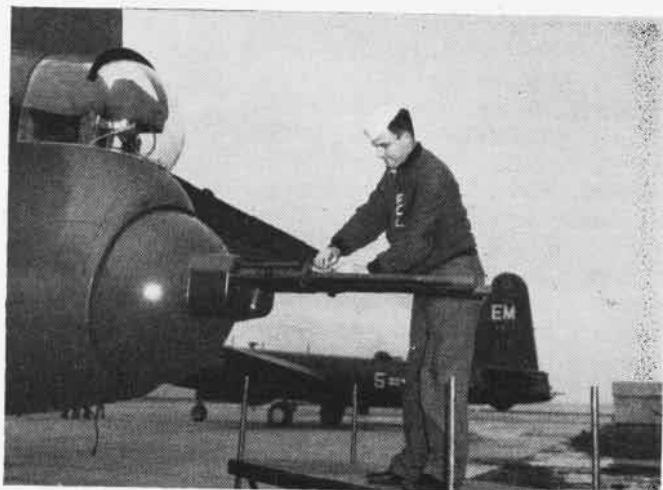
VP-82 got PBO's and PV-3's in October, 1942, being probably the first Navy outfit to have those aircraft. The first squadron in the tough Aleutian theater to use PV's was VB-135. It had been using PBY-5A's, but like squadrons in Iceland area, it found winter too tough and switched to PV's.

VB-148 was one of the first PV squadrons to fight in the South Pacific area. In March of 1944, operating around the Russell Islands, it flew fighter cover for R4D's carrying paratroops. VP-148 the preceding fall had been based in the Solomons and flew PV's, while in June of 1943, VB-137 had planes on Wallis island and later operated around Samoa, the Gilbert and Ellice islands.

Claim of being the first Navy squadron to fly the PV-1 operationally, from Africa to Borneo, is made by VPB-128.



Ordnancemen like to work in roomy bomb bay of *Neptune*; here VP-ML-8 men practice hoisting 11.75" rocket in bay



Tail turret of P2V-2 carries twin 20 mm's; semi-circular rib atop plexiglas breaks airflow to prevent flutter while aloft

GRAMPAW PETTIBONE

Missed The Boat

Two Commanders who had flown an SNB-1 from NAS QUONSET POINT to NAS ANACOSTIA finished their lunch at the Ship's Service Store, and headed out toward the plane for the return trip. They hoped to get back to Quonset Point in time to catch the 1530 boat to Newport. To save time, one went in for the clearance, while the other went out to warm up the plane and check on repairs to a malfunctioning radio.

The radio trouble was found to be entirely due to a very weak battery and the plane was started with the aid of a battery cart. Neither pilot nor copilot noticed that the plane had not been refueled.

After take-off the pilot was unable to communicate with Anacostia by radio. At this time he also noticed that the plane had not been gassed, and decided to return to Anacostia.

When he arrived in the vicinity of the field he circled the tower for visual contact with the operators and attempted to lower the landing gear electrically. He states that: "The wheels were not visible, so I operated the wheel switch to raise and lower the wheels. It was evident from the feel of the plane that the wheels went down. While checking the landing gear, the tower gave me a green light, and the touch and go landing circle of reserve flyers around the field gave way. My gasoline gauge read "empty" on all tanks. I considered it important to get into the field immediately while the traffic pattern permitted and before I ran out of gasoline over a populated area."

A few seconds later he made what appeared to be a normal landing, but as the weight of the plane shifted from the wings to the wheels the landing gear slowly collapsed. The SNB slid another 500 feet down the runway and was damaged to the extent that it will require a major overhaul.

When this plane first landed at Anacostia the pilot filled out (but forgot to sign) a written request for fuel and for repairs to the radio or electrical system. He did state that he wished to take off on his return trip in about 30 minutes.

When the plane left Anacostia it had sufficient fuel for only 45 minutes of flight. When it was inspected after the crash, three tanks were found to be empty and there was only enough gas



in the No. 1 tank for about 25 minutes of flight.

The pilot makes no mention of the position of the generator switches during any of the time that this accident was developing, from the initial starting of the engines until the wheels-up landing, but they were found in the OFF position immediately after the crash.

The accident board is of the opinion that the sequence of events was as follows:

- (a) Copilot started engine with aid of battery cart.
- (b) Following starting of engines the battery cart was removed, battery switch turned ON and generator switch remained OFF.
- (c) Neither pilot checked the quantity of fuel on board prior to take-off.
- (d) When the pilot discovered the lack of fuel and returned to Anacostia, he energized the wheel-lowering circuit. There was probably sufficient "juice" in the battery to unlock the wheels from the "UP" position and to cause them to come partially down, but NOT lock.
- (e) The heavy load on the battery caused by energizing the wheel-lowering circuit probably caused complete failure of the other electrical gear, including the fuel gauges. This would account for the zero reading which the pilot reports observing as he circled the tower for a landing signal.

After the crash the plane was hoisted and the wheels were lowered by hand using the emergency system, which functioned in a normal manner. The battery switch was turned on and the battery, free of all other loads, had sufficient voltage to make the fuel quantity gauge work and indicate 3/10ths of a full tank in No. 1 tank of the now-damaged plane.



Grampaw Pettibone says:

Looks like these fellows missed the boat in more ways than one.

It's right hard for me to understand how both these high priced aviators could forget anything as important as finding out whether the plane had been gassed. But I guess each one thought that the other was taking care of that very important item on the check-off list.

After discovering the loss of electrical power there was little excuse for trying to lower the wheels electrically. When the pilot couldn't see the wheels, he had even more reason to know that they were not locked down. By this time, however, with three empty tanks and the gauge reading zero on the tank that he was running on, I can sympathize with his anxiety to get down to earth in a hurry.

This is a real example of the cost of not taking the time to do things right. The line maintenance crew slipped up in not gassing the plane promptly, but this is something that can and often does happen at a busy air station. ALWAYS USE THE CHECK OFF LIST. IT WILL SAVE YOU SOME MIGHTY EMBARRASSING SITUATIONS.

Nice Work, Son

The story that follows is taken from the statement of a Marine Corps 2nd Lieutenant following the ditching of an F4U-B.

"When climbing to rejoin my formation after completing my second strafing run I was notified by radio that my plane was trailing smoke. I immediately checked for signs of a fire but found no indication of one. A check of the instruments showed only 10 lbs. of oil pressure remaining. As soon as I realized that my oil system had failed I leveled off and left my power settings unchanged. No oil was leaving the wing, which eliminated the possibility of an oil cooler failure.

"I was instructed by my flight leader to head for the airfield on San Clemente Island which was about 9 miles distant. While headed for the field the engine began to lose power rapidly and I could not maintain altitude. At about 2000 feet it stopped completely. Seeing that a water landing was necessary I turned on the emergency IFF and disconnected the radio cords after notifying the flight leader of my intended point of landing. I lowered full flaps before I lost hydraulic pressure, opened the canopy, and checked my safety belt and shoulder straps. Before hitting the water I turned off the gas and switches and lowered my seat.

"Being on the leeward side of the island there was no wind and the sea was smooth. Since it was difficult to judge altitude I did not attempt a stall landing but flew onto the water instead. The plane slid along the sur-

face of the water and came to a smooth stop, remaining afloat for 30 to 40 seconds. I dimmed out of the cockpit, inflated my Mae West and life raft and began paddling for San Clemente Island which appeared to be about a mile away. At 1019 an SC-1 picked me up."

Grampaw Pettibone says:

This lad had only 529 hours of flight time but he certainly handled this ditching like a veteran. He knew his emergency procedures and made excellent use of the safety equipment provided. I wish every pilot could do as well when confronted with an engine failure over water.

Dear Grampaw Pettibone:

This sounds so much like one of your stories that I decided to cut it out and send it to you. It appeared in a recent Flight Safety Report submitted by the C.O. of an Air Ferry Squadron.

"A pilot flying an F7F departed Quonset Point, Rhode Island, estimating two hours flying time to Norfolk, Virginia. After burning out the auxiliary tank he switched to the reserve tank and ran it down to forty gallons. Turning to the main tank, he burned the tank dry and then started worrying about his destination. He remembered the plane captain at Quonset Point telling him that there was an extra one hundred gallons in the reserve tank that did not register on the gauge.

"Nevertheless, when two gas gauges read empty and the other close to empty he began to perspire. His time in the air at that time had been two and one-half hours. Due to a 40-knot head wind the pilot's estimated time en route was considerably underestimated. About this time he was approaching the Norfolk area so he called in for a straight in approach. The tower gave the pilot an affirmative. After landing the pilot taxied to the ferry line, parked the aircraft, and before he retarded the mixture control both engines quit cold.

"This is just one more case of a pilot not familiarizing himself with existing weather and range of his aircraft. One circle of the field at destination might have found this pilot not available for comments."

Sincerely,

Lieut. —, USN."

Grampaw Pettibone says:

Many thanks for this story which, because of its fortunate ending, might not have reached my desk. Every month I read about 200 accident reports, but I'm awfully anxious to hear about close calls as well as accidents. Any of you fellows who want to "get it off your mind" can write me about your boners and close calls. If it appears that some one else is likely to make the same mistake, I may give them a little publicity—but never names and tales at the same time.

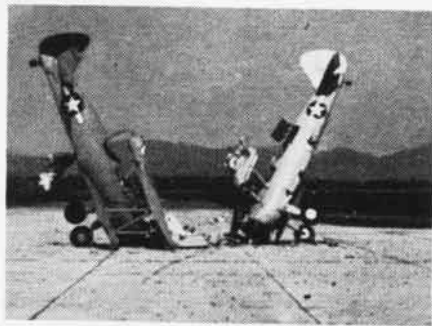
Generator Trouble?

While returning from a routine cross country flight in a JRB-5, the pilot, who incidentally had 4750 hours, noticed a gradual loss of radio strength and finally a complete electrical failure.

Arriving over the field just as it began to get dark, he attempted to lower his wheels electrically. When this failed, he and the co-pilot and passenger all attempted to lower the wheels manually by use of the hand crank, but were unsuccessful. At this time one of the passengers stated that he smelled smoke, so the pilot elected an immediate wheels up landing.

Immediately after the crash landing investigators noted that the master switches were in the "on" position and the generator switches were in the "off" position. When the plane was hoisted up the landing gear was cranked down by hand with no undue exertion. A complete check of the electrical system disclosed no discrepancies other than low batteries. No discrepancies were found in the landing gear system.

The accident board was of the opinion that the pilot failed to turn on the generator switches in flight and that consequently the batteries were exhausted. Upon arrival over the field, the pilot was unable to see his airspeed indicator, and it is believed that he was flying at too great an airspeed to permit cranking the gear down.



Ready, Get Set, Crash!

The pilots of the two N2S's pictured above landed simultaneously at an uncontrolled airport using runways 24 and 36. As can be seen from the wreckage, they arrived at the intersection in a dead heat. Both planes are recommended for strike and salvage of spare parts. Fortunately there were no injuries to personnel.

Each pilot observed the other after it was too late to avoid a collision, and each tried to turn inside the other to avoid personal injury. In so doing both aircraft collided almost head-on, bounced back a few feet, and then stopped in a nose down position.

Grampaw Pettibone says:

For my money that's a down right unsafe maneuver. The blame for this accident goes to the second pilot to enter the landing circle, since he failed to observe the local traffic landing on runway 24, and didn't notice the other Navy N2S which had completed a circle of the field and was preparing to land on runway 24.

Fatal Show

Late in the afternoon of March 27th a flight of three FG-1D's took off on a local tactics flight. The pilots were all members of the Organized Reserve out for a regularly scheduled drill.

One plane remained over the airport due to battery trouble, while the other two flew on a southerly course heading over San Francisco Bay. As the two planes came over a small town about 40 miles south of the field, the lead pilot pushed over in a formation dive. His wingman pulled out at 1500 feet and climbed back to about 2500 feet. From this vantage point he watched his teammate do a few shallow wing-overs and surmised that they were over the section-leader's home.

After a few minutes the wingman observed the other FG roll into an inverted position from which the pilot attempted to pull through in a half-loop. There was insufficient altitude to complete this maneuver which was started at about 1200 feet. The FG crashed into the ground with wings level at an angle estimated to be 20 degrees. The aircraft was destroyed in the crash and fire which followed and the pilot was instantly killed.



Grampaw Pettibone says:

Seems like somebody has to do this just about once every six months to prove to the rest that flathatting and unauthorized low altitude acrobatics don't pay.

This chap violated Local Flight Rules, Safety Bulletins, CAA Regulations, and Navy Regulations and, like many before him, he paid for this spree with his life.

Dear Grampaw Pettibone:

In the April Issue of NAVAL AVIATION NEWS you mentioned that any one flying the F4U type aircraft was slightly barmy if he didn't know everything in Technical Order 20-46. Now, being an old Corsair Hotshot myself, I whipped right into the office and demanded a copy. Imagine my surprise when this Tech Order turned out to be all about the installation of the parachute release mechanism in an airborne life raft. When I told them I wanted to read up on Spin Recovery in the F4U, they broke out Technical Note 20-46.

Sincerely

Lt. (jg)

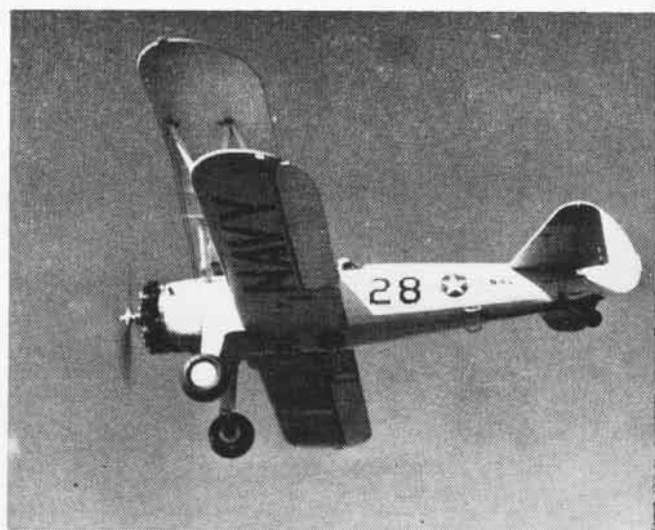


Grampaw Pettibone says:

The Doc's been telling me for a long time that I could use a new pair of specs, and this seems to cinch it. Anyway I'm pleased that so many of my readers caught this error, and I'm glad that some, like you, had sufficient perseverance to find the correct reference—"SPIN RECOVERY CHARACTERISTICS IN THE F4U," TECHNICAL NOTE 20-46.



THE PILOT OF THE SKYSTREAK HAS TO WORRY ABOUT FLYING TOO FAST



THE PILOT OF THE N3N WORRIED NOT ABOUT A CRITICAL MACH NUMBER

STALKING THE MACH

EVERY airplane has a built-in "critical Mach number." This is the speed at which local sonic velocities occur over the wing. This air, traveling across the wing at or above the speed of sound, generates shock waves which in turn, cause the plane to develop unusual, and usually unpleasant, flight characteristics.

The very best advice on the subject of critical Mach number, probably is: AVOID IT. However, test pilots are required to dabble a bit with compressibility effects in the course of their job. Too, there is always the likable jerk who inadvertently gets into the critical range while just trying to get along—with full military power and while aimed straight down.

For these people, a look at what the National Advisory Committee for Aeronautics advises is well worth while.

• Number one rule in the NACA high-speed test booklet is: "All initial flight tests near sonic Mach numbers should be carried out at an altitude at which excessive air loads cannot result even though the airplane is stalled out."

The reactions of different aircraft to compressibility effects do not follow any uniform pattern. A plane may develop flutter or buffet, or it may tend to tuck down or nose up. Severe air loads can result from these tendencies with no help from control forces.

From NACA case histories: "During normal recovery from a dive at critical Mach number, the plane abruptly pitched up even though the pilot applied no corresponding change in control forces."

At low altitude, this type maneuver might well exert sufficient load to dewing the average plane. The air load that can theoretically be imposed on an

aircraft flying at a constant Mach number decreases with altitude. For instance, one airplane flying at Mach 1.0 at sea level, could theoretically, have a load of over 26 G's placed on it without stalling—if it didn't fall apart, which of course it would. At 50,000 feet, the same airplane flying at the same speed, would only accept an air load of 3 G's before it stalled out.

THE CHART at the bottom of the page, which is for an airplane with a wing loading of 50 pounds a square foot, shows the minimum altitude at which tests at a given Mach number should be conducted in order to avoid overloading the airplane structurally. Reading the chart shows that if an airplane with a maximum design load factor of 6 is to be tested at a Mach number of .875, the test should be carried out at an altitude of 30,000 feet or higher, until it has been established that irregular flight characteristics will not result, which might cause excessive air loads.

At lower altitudes, excessive air loads might well result in structural failure. So, until the plane's reactions are a matter of record, better stay high enough

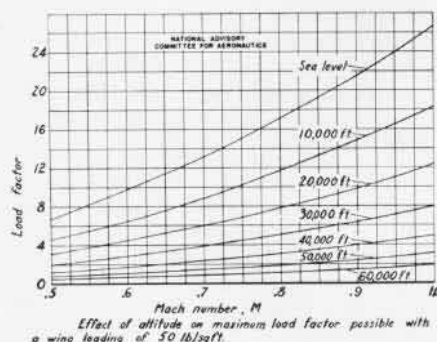
so an unexpected condition will only offer a thrill and not a parachute ride home.

• Rule number two by NACA states: "At Mach numbers above the critical of the wing, flight tests at progressively higher values of Mach number should be undertaken only in small increments and only after exploring accelerated flight characteristics at lower Mach numbers."

Some airplanes can be flown considerably faster than their critical speed without running into serious trouble. Other planes which fly very nicely in straight and level flight at speeds above their critical Mach number may react violently when control force is applied, even at slower speeds. Still other planes may not be flown beyond their critical speed without becoming uncontrollable or suffering structural failure, even in level flight. Easy does it when checking out your plane in its critical Mach range.

A USEFUL rule of thumb for estimating the critical Mach number of straight winged airplanes, is that the critical speed of low-drag airfoil sections at the design lift coefficient is Mach .70 for sections 15 percent thick. This figure increases by .01 for every percent the wing is thinner than 15 percent and decreases by .01 for every percent the wing is thicker than 15 percent. A straight-winged plane with a 10 percent thick wing, should have a critical Mach number of approximately .75. Sweep-back, of course, raises the critical values.

If the plane reacts favorably to acceleration at speeds up to the critical, a judicious program of testing at higher



than critical speeds may be carried out. The speed increment should remain small. For the first .06 above the critical, speed increments of .02 are considered sufficiently small for safety. At speeds of .06 above the critical, increments should not exceed .01 Mach number. Keep the PROCEED WITH CAUTION sign out.

• The third NACA rule says: "There should be accurate recording and analysis of essential data as tests progress." This rule is a corollary of rule two.

A pilot is a pretty busy lad just flying the airplane at high speeds. If reactions of the plane at high speed aren't recorded and analysed, the white hair he gains up there isn't going to help science or posterity a bit. Data which must be recorded are: indicated airspeed, altitude, normal acceleration and elevator angle. Elevator control force and many other items may also be profitably recorded.

This article is not intended, by any means, to teach any pilot how to test a plane safely at high speeds. Using these basic rules, and with a dozen or so years of experience, plus a good scientific and mathematical background, a test pilot can safely test a high speed plane that he is thoroughly familiar with. Dilbert and his pen pals can study this article from now until doomsday and still knock themselves off trying to find the "critical Mach number" of their SNJ. So don't try it, Jack, unless it's your business, or you're apt to get the business.

For those individuals who need to be interested, the report which supplied these few suggestions makes good reading. It is NACA report RM No. A7G25, by Lawrence A. Clousing.

Big Tires on Constitution

R60 Uses Almost Any Landing Field

The Navy's Lockheed *Constitution*, largest proven transport airplane in the world, can land on any airport capable of handling a standard twin-engine transport, thanks to its eight-wheel main landing gear.

Since the airplane's 92-ton weight is spread over a wide area, any airport now serving domestic and international air travel will accommodate the 180-passenger plane without extension or strengthening of present runways.

The *Constitution* will take off in 2,350 feet and clear a 50-foot obstacle in 4,320 feet from a standing start at sea level. It can land over a 50-foot obstacle and stop in 2,300 feet.

The multiple wheels give great reduction of weight in the gear and reduce blowouts to a minimum. It can land safely under favorable conditions



FOUR TIRES SPREAD WEIGHT OVER BIG SURFACE

with any two tires deflated on a single main landing gear. Its reversible propellers can stop it during its landing roll without brakes, although each wheel has two braking systems. The *Constitution* is still undergoing manufacturer's tests, before the Navy takes over.

VP-ML-6 Flies Pacific Beat

Tests Celestial Navigation vs. Loran

Medium Seaplane Squadron 6, now stationed at NAS TANAPAG under the command of Cdr. Edward Sternlieb, logged a good chunk of flying time during the third week in December. Twelve extended (12 hours) navigation hops, two of them at night, were flown.

All the flights were non-stop round robins in the Marianas, Bonins and Caroline areas. Trips were made to Truk, Yap, Ulithi, Woleai and Iwo Jima.

Most pilots discovered (if they had not already known) that Loran in this area is not completely reliable. The emphasis was definitely on celestial navigation with generally good results.

Since most pilots in the squadron had gone through PBM training at Banana River and had used the many excellent Loran stations on navigation hops in the Caribbean area, they had had a tendency to place celestial navigation in a secondary position. These hops, therefore, helped place the two methods of navigation in their correct relative importance.



GCA landing system is explained by W. Webb SpY3 to members of University of Washington Airport Management Class, Y. Oldermat, K. Colony and J. Roderick who attended NAS Seattle field trip

Fighter Outfit Is Versatile

Many Veterans on Roster of VF-6-B

VF-6-B, CORAL SEA—A visitor to this squadron's ready room could get checked out with a few thousand words on anything from shooting *Zeroes* to running submarines.

The outfit boasts a wealth of experience not evident in former wartime groups. The pilots' previous experiences range from one who made eight war patrols in submarines to another who flew wartime missions in airships over the Southern European and North African areas.

Besides a half-dozen pilots who flew from carriers during the war, the squadron has 15 officers who had shipboard experience before entering aviation. Eight of these aviators are graduates of the Naval Academy. The other seven were enlisted men who served as aircrewmen or on ships of the fleet. Only 20 of the squadron's 35 pilots entered the Navy through regular aviation channels, including the one midshipman now attached.

Single Type Runs Are Best

Marine Gunners Master One at Time

VMF-322, PACIFIC—This squadron discovered during gunnery practice that a pilot makes better progress if he makes one type of gunnery run rather than several combination runs.

Not only can he make more runs during a given period, but it is also possible to tell on which type of runs the pilot gets more hits and where he makes errors. Thus scheduling can be planned to gain the most from each flight made.

After each pilot has attained a reasonable proficiency on each type of run individually, he is then scheduled for combination runs and subsequent qualifying flights. Using this system, it is expected that all pilots will be qualified during the coming month with the necessary 7.5% hits.

UtWing Gives Policy Data

Insurance Booms after Training Talk

UTWING, PACIFIC—All it takes, apparently, is a little know-how about insurance and a little salesmanship.

Officers from Utility Wing attended a short course on insurance given by James E. Fessenden, regional insurance officer for Veterans Administration. They were given information on all phases of National Service Life Insurance so they could tell the men of their respective commands how it works.

The officers went back and set about contacting personnel and advising them about reinstating or converting their insurance. In VU-7 alone, more than \$500,000 worth of NSLI was converted or reinstated within a two-month period.

DID YOU KNOW?

Reeves Heads Air Training Skipper Heads Four Air Commands

Rear Admiral J. W. Reeves, Jr., is scheduled to take over duties as Chief of Naval Air Training on 1 June, relinquishing command of Naval Air Transport Service which he had headed since March 1945.

His successor as commander of the Navy's reduced air transport system is Captain Marshall B. Gurney, who was deputy commander of NATS. Moffett Field, headquarters of NATS, is expected to remain under Navy control as the major base for Navy transportation. Rear Admiral Frank D. Wagner, Reeves' predecessor at Pensacola, replaced Rear Admiral W. K. Harrill as ComFair-WestCoast.

At Pensacola, Adm. Reeves heads the training of Navy pilots and technicians. His command includes Basic Air Training, Pensacola; Advanced Air Training, Jacksonville and Corpus Christi; Air Technical Training, Memphis, and Naval Air Reserve Training, Glenview. As head of the latter command, he will direct training of the thousands of pilots and crewmen who fly from the 23 Reserve air stations throughout the country.

Mariners Move to Corpus

Multi-Engine Training Is Switched

NAS JACKSONVILLE—Multi-engine flight training has been consolidated at Corpus Christi with the moving of VP MS ATU #10 to the Texas station during April.

Only one week of flight training was lost by the move and two weeks of ground training. All PBM's were flown to Corpus, leaving SC-1's the only float planes still operating from the ramps here. Normal training operation was resumed at Corpus on 26 April.

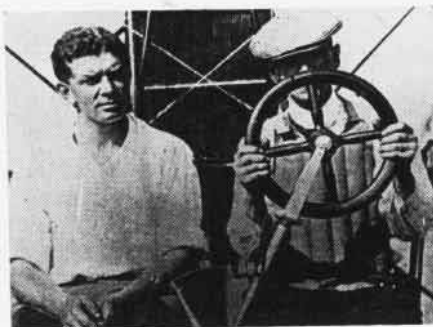
Aviation Birthday is May 8

Navy Bought Curtiss Planes in 1911

Secretary of the Navy John L. Sullivan announced that May 8, 1911, has been selected as the official birthdate of naval aviation.

On that date, the Department of the Navy, at the direction of its Secretary, George von L. Meyer, ordered an aircraft from the Curtiss Company, Hammondsport, N. Y. It was a Curtiss *Triad*, a hydro-airplane amphibian with retractable wheels and a pontoon.

On delivery it was tested by the



ELLYSON, CURTISS IN OPEN COCKPIT 1911 JOB

late Commander (then Lieutenant) Theodore C. Ellyson, the Navy's first qualified aviator. Ellyson had been taught flying by Glenn Curtiss.

Various other dates had been considered before the May 8 date was selected. One was August 30, 1913, when Acting Secretary of the Navy Franklin D. Roosevelt signed an order creating an Aeronautical Division in the Navy Department.

Old Sailor Flies Hotshot

Medal of Honor Winner's First Flight

A 90-year old Congressional Medal of Honor holder, Mr. William Spicer, arrived at Moffett Field recently via NATS *Hotshot* on his first airplane flight.

Spry as any man half his age, Mr. Spicer came to California to visit some old shipmates and rode the *Hotshot* by virtue of the authority which permits holders of the Congressional Medal of Honor to travel via Armed Forces aircraft within the U.S.

Sixty-three years ago Able Bodied Seaman William Spicer, USN, worked



VETERAN SAILOR ENJOYED FIRST PLANE RIDE

at the royal mizzen yards of the frigate USS *Jamestown*, then making a midshipman training cruise off the East Coast. Mr. Spicer's Medal of Honor was awarded for "heroism while engaged in the perilous work of sweeping and disabling 27 contact mines in the approaches to Caimanera, Guantanamo Bay, Cuba, July 26th and 27th, 1898," during the Spanish-American War.

Mr. Spicer is pictured here with his orderly on the flight, CSVP Rubinie Pappan of VR-3.

Following his flight, Spicer wrote NATS: "I always considered myself one of the forgotten men . . . in all my life I never was treated with so much kindness and consideration as I received on my trip here in the plane."

ACI Reserves Take Training

100 Officers Get Two-Weeks Course

Recognizing the valuable wartime contributions made by Air Combat Intelligence officers, the Naval Air Reserve is again conducting a special two-weeks training refresher course for these Reservists.

This course, scheduled to begin on 7 June, is being held at the Naval Intelligence School, Anacostia, D. C.

Latest procedures and techniques in such fields as air support, amphibious intelligence, current aircraft developments, photographic interpretation and intelligence, recognition, and CIC, will be studied. Field trips and demonstrations will supplement this instruction.

About 80 Navy and 20 Marine officers in both the Organized and Volunteer Reserves, who have requested this training, are being selected throughout the country for the course.

Marines Set Air Maneuvers

Annual Mobilization Dates Move On

Mobilization of all Marine Corps Air Reserves is scheduled to be held this year at MCAS CHERRY POINT 10-24 July and at MCAS EL TORO 7-21 August, for East Coast and Western units respectively.

Last year, the first year such a mobilization was tried out, to see how quickly Reserves could be called up, 17 squadrons flew to Cherry Point in a single day. At El Toro, bad weather and longer distances required three days to bring the squadrons to Southern California. This year's dates are a month ahead of the 1947 date.

Pilots flew their own planes, while ground crews and non-pilot officers were flown to mobilization points by VMR-252 and VMR-152, regular Marine transport squadrons in R5C's and R4D's.

At Cherry Point, Reservists flew 5,235 hours without a single fatality or accident of any consequence. El Toro flight hours totalled 5,716, despite morning ground fogs that curtailed flying somewhat in September. Ground control intercept squadrons also attended the maneuvers and ran radar searches in cooperation with *Corsair* squadrons.



LOCKHEED MEN SHOW OFF NEW SHOOTING STAR

AF Gets Two-Seat Jet Plane P-80-C Made Longer For 2 Cockpits

Now that the Navy is buying 50 P-80-C jet fighters to use for training its pilots until Navy jets are available in larger numbers, its fliers will be interested in a new two-seater version the Air Force is going to use for a trainer.

The TF-80-C is 38" longer than the regular Lockheed *Shooting Star* fighter and has an elongated plastic canopy covering both cockpits. The student rides in the front seat and the instructor behind. Use of the jet trainer is expected to eliminate one entire step in normal AF fighter training—transition fighting in high performance conventional airplanes. New student pilots will step directly into jets from basic flying in SNJ's.

Blue Angels Get New Fliers Exhibition Team Put on 74th 'Show'

NAS JACKSONVILLE—The Navy's flight team, the *Blue Angels*, racked up their 74th appearance before the public in 20 months when they flew three exhibitions at the Miami Air Maneuvers Jan. 9-11.

It was the farewell performance of Lt.



EVER SEE AN ANGEL? HERE ARE FIVE OF 'EM



GROUNDCREWMEN MAINTAIN ANGEL PLANES

Cdr. R. A. Clarke and Lt. (jg) W. C. May, who have been on the team since the 48th and 30th performances respectively. To replace these members departing for sea duty are Lt. (jg) H. C. McKnight and Lt. (jg) H. R. Heagerty.

They will learn the routine from experienced members who are holdovers—Lt. Cdr. R. E. "Dusty" Rhodes, Lt. C. A. Knight and Lt. R. H. Thelen. Rhodes is leader of the team, who also serve as instructors in the Advanced Instructors Training Unit.

To date the *Blue Angels* have flown a distance equal to twice around the globe, performing before no fewer than 1,500,000 spectators in all parts of the country.

Thornell Sinks Sub—Finally If At First You Don't Succeed—Try

From Heavy Patrol Squadron TWO in the Pacific, comes this tale of a "Two-man Sub's Demise" or "Ring the Bell, Thornell."

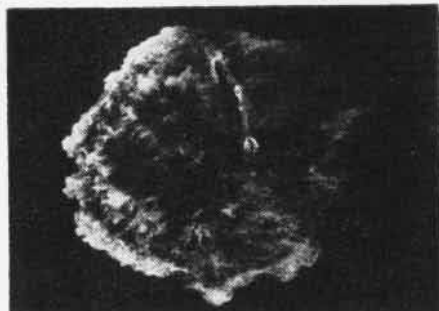
On 27 January, two *Privateers* set out to sink a two-man Jap submarine which had been towed to the target area for that use. The planes, not wishing to take undue advantage of the small tub—it was slightly larger than an overgrown rowboat—only carried eight 100-pound GP bombs and one small depth charge each.

Though the sub, left over from the late conflict, was unmanned and incapable of too stiff evasive action, it nevertheless cared not a whit about being sunk. One, two, three, four runs were made, and the elusive sub floated on. Our intrepid airmen, Lieut. Enos Thornell and Lt. (jg) Berens, in the manner of good Marshal Montgomery, "... regrouped their forces and fell upon the foe like a furious rabbit." Five, six, seven runs and still the stoutly serene sub stuck to her freeboard. On the eighth run, Lieut. Thornell was bitter. He drew back, critically surveyed the situation and roared in to the kill. The 100-pound GP flew true to the mark. The little sub, broken, beaten, sank slowly into the sea.

Lest the reader be misled, there are a couple of points about this kind of bombing that might well be reviewed.

Minimum release altitude for a 100-pound GP bomb is 500 feet. Assuming the plane to be traveling at 200 knots, the drop had to be computed and trig-

gered at least 600 yards away from the target; for a bomb dropped from 500 feet at 200 knots will travel 1855 feet through the air between point of release and point of contact. The target was very small and had only 18 inches of freeboard. To be effective, a direct hit was required by the 100-pound GP



BADLY BENT SUB IS ABOUT TO MAKE LAST DIVE

which is explosive on contact. The bombs were dropped singly, not in train. In other words it was good bombing.

Air Groups Keep CV Busy Boxer Has 733 Landings in 5 Days

ACAG-1, WEST COAST—The shortage of available aircraft carriers for West Coast air groups has made it necessary for shipboard operating to be conducted on a close schedule, with groups taking turn aboard for short periods.

Attack Carrier Air Group One, under command of Cdr. Fred E. Bakutis, recently completed a profitable period aboard the *Boxer* (CV-21), 1 to 5 March. The group made 733 landings with 700 hours flown, indicating that a schedule to promote smoothness of operation procedure around the carrier and perfection of group tactics were particularly stressed.

Each strike made a coordinated attack on the *Boxer* followed by sector break-ups and landings. Less experienced pilots were given opportunity to lead attacks and all pilots were trained as thoroughly as possible.

The week was highlighted by the 20,000th landing aboard the *Boxer*, made by Ens. Leslie A. Else. Capt. Stanhope C. Ring, CO of the carrier, congratulated Ens. Else and presented the traditional cake.



CAPT. RING PASSES THE CAKE TO ENS. ELSE

'SEE DUTY' ON A CVB



AD-1 SKYRAIDER TAKES OFF FROM MIDWAY DECK; STRENGTHENED PLANES PASSED TESTS ON CVB

VA-1-B, OCEANA—Back from five months of cruising the world on the *Midway*, CVB-41, this squadron can look back on a tour of sea duty filled with plenty of activity and unusual events.

Following qualifications of the AD-1's aboard the *Midway* in October, the ship steamed toward Bermuda for operations with the submarine forces and the Air Force. Although weather prevented the strike on Bermuda, many submarines were "sunk," while fighters removed the menace of the B-29's. The Air Force had a different version of the outcome, however. . .

The ship then steamed toward Argentina, Newfoundland, to assist in support of amphibious landings. Weather again prevented air operations, and after disembarking passengers, the *Midway* headed for Gibraltar. Air operations were suspended until the ship was within flying distance of land. Many members of the squadron got their first view of Europe from high above the carrier.

While operating in the Mediterranean, the *Midway* made brief visits of about a week in various ports. The Christmas holidays were spent in Naples. Other ports of call were Bone, Algeria; Genoa and Taranto in Italy; Malta, and Gulf de Hyeres in France.

On 4 December, while operating out of Malta, the squadron was requested to send a division of planes to the beach to pick up mail for the ship. Shortly after take-off on the return trip, Lt. (jg) Robert H. Reeb experienced complete power failure. He ditched the plane successfully in Marsakloxx Harbor. The pilot was picked up by helicopter and returned to the ship. All

hands were greatly relieved to learn that he had no mail aboard.

During operations in Genoa area, several flights were conducted over northern Italy, with parades over most of the principal cities, including Milan, Venice, Pisa, Leghorn, Bologna and several others. Night bum-boat procedure was conducted in Genoa harbor, with four ensigns failing to qualify.

During the ship's stay in Naples, many members of the squadron were able to include Rome in their visits, through tours arranged by the Chaplain. Similar tours in Paris and Nice were conducted while at Hyeres, France. During operation between Malta and Taranto, Italy, on 21 January 1948, while bombing a towed spar, Lt. Jack E. Godfrey experienced partial loss of elevator control after pulling out from his dive.

A wingman reported that the left elevator was damaged. After checking the controls at slow speeds, Lt. Godfrey successfully brought the aircraft aboard. An informal board of investigation found that the aircraft had been struck by a bomb, with a slight possibility of it being from the damaged aircraft.

On the night prior to scheduled departure from Hyeres, France, several members of the squadron were involved in the swamping of one of the motor launches. One of our maintenance men, C. V. Truchel, AMMI, was among the missing. Other members of the squadron assisted greatly in aiding fellow survivors, which prevented the incident from being more disastrous than it was.

Following another visit to Naples and a few days stay at Gibraltar, the *Midway* left the Mediterranean. The

return crossing of the Atlantic was very rough, with winds up to 75 knots, but we enjoyed almost every minute of it.

Three of our aircraft were damaged when the #3 elevator slipped its locks and started to settle, and two of the planes were unable to fly off.

On 20 March, six officers went aboard the *Saipan* (CVL-48) to conduct landing operations in AD-1, AD-2 and AD-1Q aircraft. All these aircraft had been strengthened to eliminate structural failures which came to light on our Mediterranean cruise. The operation was highly successful, with each pilot making about 25 landings, and each aircraft logging 50 landings, some with loads. No structural failures occurred during the operation.

'Coral Sea' Ends Shakedown Racks up 4,099 Take-Offs on Cruise

U. S. S. CORAL SEA—This carrier completed shakedown training at Guantanamo Bay, Cuba, on 27 March, receiving a mark of excellent on both administrative and operational readiness inspections.

The air department and Air Group (CVBG-5) were assigned a mark of outstanding on the operational readiness inspection. During the shakedown, a total of 3,893 take-offs and 3,948 landings were made.

Lowest average intervals were as follows: Catapult, 24.1 seconds (20 planes); unassisted take-offs, 13.3 seconds (41 planes); and landing, 23.6 seconds (44 planes). The lowest squadron landing interval to date is held by VF-6-B with 20.2 seconds for 27 planes.

Ens. M. E. Russell of that squadron made the 3,000th landing aboard the *Coral Sea* in an F4U-4. The 4,000th landing was made by Ens. F. C. Richards of VA-6-B in an AD-1. So far, VF-6-B has hogged most of the cakes which go to pilots making the 1,000th landings. Out of the first three, that squadron won two.

Final days of the shakedown were featured by operations of the Air Group against the battered island of Culebra.

NAS ATLANTA—The Red Cross blood bank, established in downtown Atlanta, is now richer by many pints of blood contributed by officers, such as the senior medical officer, and by some 20 enlisted station-keepers, many of whom were paying back "loans" received during the war. The station now has a standing date on Wednesdays at the blood bank.

NATS, ASIA—The temperature at Tokyo was 34 degrees and a chill 35-mile wind blew. Only hangar space covered the transport's nose and wings, with no way to close the doors or heat the area. With conditions not conducive to loafing, five NATS machinist's mates changed an ignition harness and ran up the plane in 4½ hours.

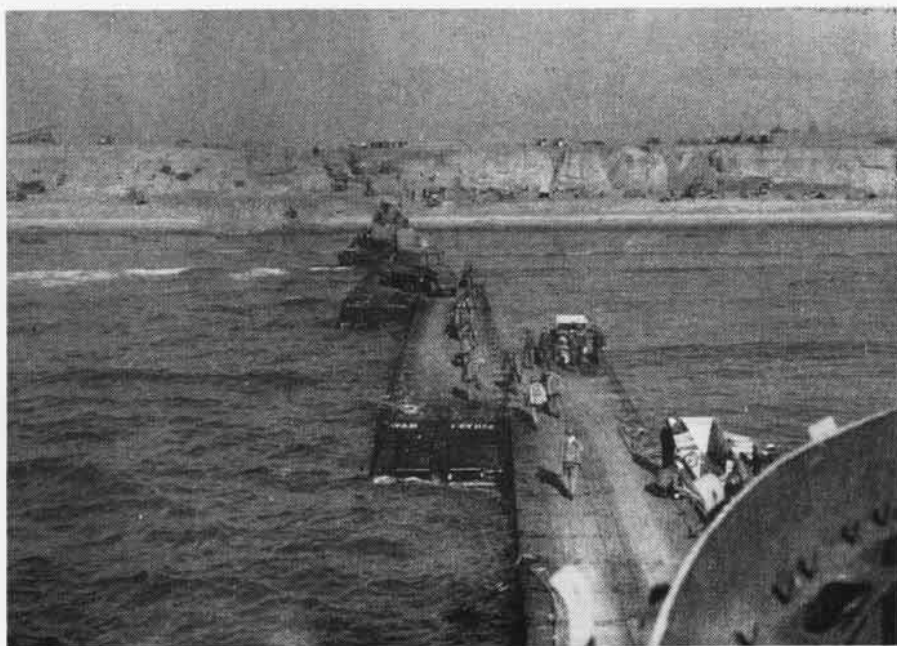


HEADQUARTERS SQUADRON 33'S CORSAIRS LINE UP ON 'CAPTURED' AIRSTRIP AT CAMP PENDLETON AS MARINES BEGIN BIGGEST AIR OPERATIONS

CAPTURING AN AIRSTRIP

MCAS EL TORO—In the Marine Corps' largest peacetime war game, an entire Marine air group moved into the field for five weeks, set up complete installation and conducted full-scale operations supporting ground troops. They "captured" the air strip at Camp Pendleton, south of here, and climaxed their exercises with a mass live-bombing exhibition for military observers.

Actual preparations for the miniature war began last November when senior Marine Corps aviator, Maj. Gen. Louis E. Woods, chose veteran airmen Perry O. Parmelee and Frank H. Schwable, both Colonels, to begin preparations to conduct the aerial portion



MARINE AIR GROUP 33 MEN GO ASHORE ON PONTOONS AT ALISO BEACH AS IN WARTIME



No invasion or field exercise would be complete without a shot like this of Pfc. Fisher, Starke, Pelton and Hammons



Rolls and rolls of .50 cal. ammunition are stacked on shelves after belting crews of VMF-223 finish their tasks of loading

of an amphibious operation. It was in conjunction with ground forces under Maj. Gen. G. B. Erskine, commander of the First Marine Division at Camp Pendleton.

The plan of maneuver called for Marine Air Group 33 under Col. Parmelee to stage, in full battle dress at Seal Beach. They had sufficient equipment to carry on full scale operations and loaded there aboard Navy LST's. On D plus one they disembarked at Aliso Beach, Oceanside. Shortly after they occupied the airfield at Camp Pendleton. Within three hours a combat air patrol was airborne and continuous missions were up the rest of the day.

Marine Air Group 12, salty carrier-trained *Devildogs*, went aboard the cv *Boxer* with their F4U-4's to cover from the air the landing of the assault troops and the following MAG-33 airmen onto the beach head.

With many new recruits, but with still enough old hands, veterans of many a campaign, to show them the ropes, the groups swung into action reminiscent of the hustle and spirit which characterized veteran organizations going into action for the first time during the last war.

MAG-33 disembarked according to plan under the protective cover from the *Boxer* offshore, proceeded inland

and set up a camp in which the men and officers lived for the next five weeks. Within a few hours of their arrival at the field, the entire command was under canvas at the new location and was getting hot meals from the hurriedly-installed field kitchens.

At nine o'clock the next morning the flight echelon under personal leadership of Col. Parmelee arrived at Pendleton airstrip, 78 planes strong. Squadrons 223, 312 and 323, which compose the striking arm of the group, immediately began a series of varied offensive operations against the "enemy" in the area.

FOUR planes maintained a continuous alert at the end of the runway. They were ordered aloft several times each day and when airborne, were directed to fly out to sea and then reverse course to make simulated enemy attacks on the airfield. This gave the ground control intercept squadron a chance to track them on its radar. Combat air patrols then were directed to intercept simulated enemy raids.

By the night of D plus 4 all equipment and supplies had been moved to the airfield from the beach, a distance of 15 miles, at the rate of 750 tons a day. Three more Marine organizations had joined the fray by this time, Photographic Squadron 254, Tactical Air Control Squadron 2 and GCIS-1, all of which were joined with MAG-33 for the maneuvers.

The air group was operating as efficiently as it had at El Toro, but actually flying twice as many hours as it had at its home base. Even the aircraft availability picked up with an average of 80% of the planes available for dawn to dusk operations.

Three weeks after D-day a well-organized typical overseas Marine camp was complete in every detail. A hos-



This could be a desert airstrip on almost any continent, with aircraft supplies and bombs stacked in piles for planes operating nearby; these are 1,000-pound bombs



Observers on hill near impact area at Camp Pendleton observe plane bomb hits on numerous amtracks around the area

pital, a mobile post exchange, laundry and chapel were functioning. Electric lights and portable showers were available, heaters were installed in all tents, and outdoor movies were shown every night. Dentists had their portable "electric chairs" doing business as usual.

THE EVER-increasing ferocity of air "strikes" continued, culminating in the final demonstration of the Marines' air might in a day-long attack featuring every weapon the *Leathernecks* could muster.

On March 16, the group carried out a strike against a simulated enemy airfield with 1,000-lb. bombs and five-inch rockets in the morning. The afternoon attack featured close air support for ground troops, using 500-lb. bombs and five-inch rockets. Obsolete amtracks were attacked with machine guns, rockets and bombs until annihilated.

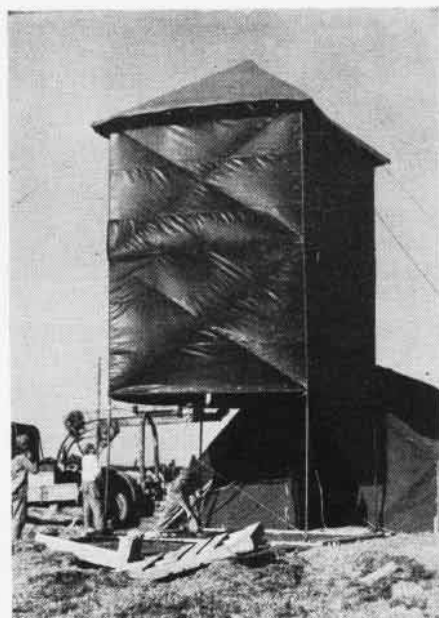
These demonstrations were conducted in the impact area at Camp Pendleton

where many distinguished guests watched proceedings from a nearby hill. This was the climax of the operation and on March 20 the Group moved back to El Toro. First word of the proposed operations had been received by the Group on 26 November 1947. The first order was not received until 8 January 1948. On receipt of the order all squadrons were brought up to their tables of allowance, and personnel temporarily assigned to MCAS EL TORO were recalled to the Group for the exercises.

Marine Transport Squadron 152, another unit of the First Marine Aircraft Wing, furnished eight R5D's and VMR-352 from Ewa, Oahu, three more to furnish their first postwar tactical air lift of ground troops. They flew 35 flights with these men, moving the Seventh Marines under combat conditions with mobile transportation and equipment included to reinforce a U.S. Island outpost under attack by "enemy" forces.



Sgts. Holly, Sallade, Welker and Capt. Rotter, all pilots of VMF-323, do handy-talky communicating just for practice



Portable parachute loft goes up as SMS-33 gets ready to service Marine pilots



Navy LST unloads a truckload of aviation supplies for MAG-33 at Seal Beach; this looks like landings in Pacific war



Tenting tonight? VMF-223 personnel raise tents, polish stovepipes so their 6-weeks training will be more comfortable

WAVES HAVE GOOD RECORD IN TRANSPORT DUTIES



FLIGHT ORDERLY MARGARET YOUNGBLOOD, ATO LT. EDA GRUPEN STUDY SPACE CONTROL CHART

A CASUAL reading of the account of the recent near tragedy on a NATS "U"-route flight near Donaldsonville, La. (NANews, May, p. 15) might easily miss the fact that the CSPV aboard was a WAVE. Rubinie Pappan, chief specialist (V), was flight orderly on the ill-fated R5D, the remains of which are pictured on this page. The miracle is that the 19 persons on the plane escaped with their lives; without, in fact, even serious injury.

The crew has been commended for excellent work, and a large share of credit for bringing the 14 passengers safely out of danger fell to Chief Pap-



CHIEF PAPPAN RECEIVED 'HEROINE' HEADLINES

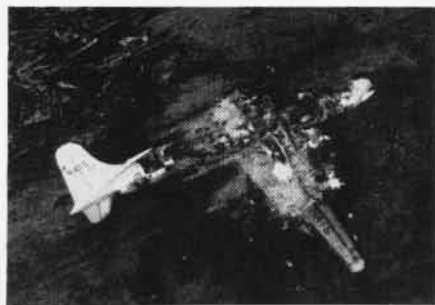
pan. "Naturally I was scared," she told a reporter after the crash. "I think we all were. But we know our emergency duties by heart."

It is this phrase: "We know our duties" which underlies the success of the Women Reserves assigned to transport squadron activities. At the present time the flight orderlies represent the largest number of WAVES in any aviation rate. There are 80 still on active duty with NATS.

Responsibilities of flight orderlies are many and varied. They check aboard all necessary equipment from aspirin to oxygen. Their in-flight work includes such widely variant duties as serving

meals and making up the manifest from which the next station can determine what space and weight is available. They know the principles of weight and balance; they know how to keep passengers comfortable. They have proved themselves in efficiency, in stamina, in courtesy and cheerfulness.

Another category in which WAVES have been serving with NATS is as Air Transport Officers. Here the numbers on active duty have shrunk from around 30 feminine ATO's to four. The work of an ATO, like that of the specialist (V), is anything but dull. Whether it's carburetor trouble in an R5D or determining if Capt. Smith with 100 pounds of excess gear has a high enough priority to get aboard the plane



NINETEEN ESCAPED ALIVE FROM BURNING R5D

—the problems fall into the ATO's lap.

This doesn't mean that ATO's have to know how to repair or replace a bad carburetor, but they do have to know where to find someone to get it done as quickly as possible to get the plane out on time. The officer who, in a matter of minutes when the plane is on the deck, determines where the weight in the plane should be placed, has spent many training hours learning how to use the "slipstick" in making calculations of weight and balance.

In brief, the ATO is responsible for all NATS aircraft transiting the station. This includes 1. planning the load prior to arrival; 2. meeting the plane; 3. supervision of fueling, cargo loading, mail loading, checking in passengers, loading baggage, computing flight papers, procuring any engineering assistance needed, getting passengers and plane crew to chow; 4. sending off the flight on time.

Thoroughness and patience in attention to details are qualities which NATS administrative officers have cited in commenting on the success of WAVES in air transport duties. And when an unforeseen emergency such as the Donaldsonville crash reveals a capacity for cool-headed heroism as well, the answer is: "We know our duties."



TRAINING COVERED PROPER LOADING OF CARGO



GET THE RIGHT LEVER

Don't Raise Wheels for Flaps



ONE OF the quickest ways to lose friends and play hob with your fitness report is to raise your wheels instead of flaps during the landing roll-out. Some of the friendliest skippers have been known to recommend everything from two weeks with the repair crew to reclassification following boners of this sort.

One even thought it would be just fine if there were some way that the pilot could be made to pay for the cost of repairs. (Not too practical an idea, incidentally, since the A&R estimates ran to about \$7,000).

It is pretty generally known that this particular type of accident occurs more frequently in the TBM than in any other type aircraft. However, the score so far for this year is six in TBM's, three in SNJ's and three in F8F's. Almost all of these accidents occurred while planes still were traveling at

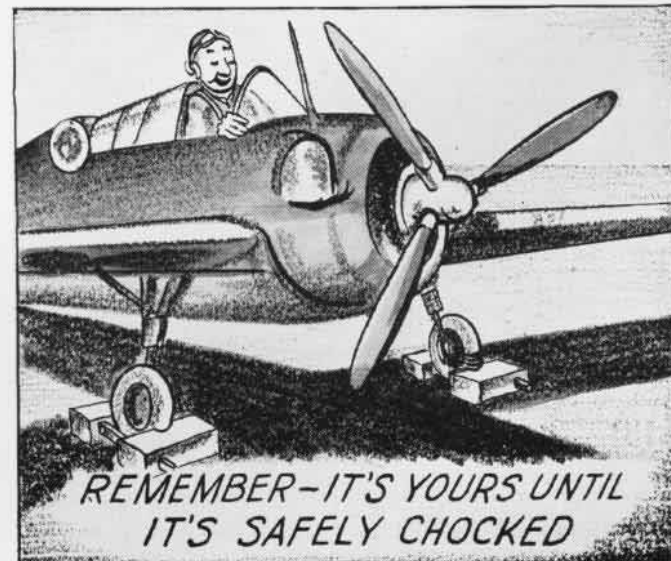


a pretty good clip down the service runway. None occurred after the plane had completed the turn off the service runway.

The following suggestions have been offered to eliminate this type of accident:

1. Don't raise flaps until the plane has slowed down to taxi speed, and completed the turn off the service runway.
2. Look at the flap control lever before you actuate it.

The pilot who takes his eyes off the runway while he is still traveling at 30 to 40 knots is inviting trouble in the form of collisions, swerves, or groundloops. After the turn off the service runway has been completed, the plane is traveling slowly and the pilot can safely look before he reaches for the lever. Since, by this time, the weight of the plane is solidly on the wheels, the safety down lock mechanism is more reliable in the event of an error by the pilot.





FEW NAVAL AVIATORS HAVE SEEN AN SC-1 SEAHAWK WITH WHEELS; HERE ENS. BAAR OF DULUTH AVIATION UNIT CHECKS OUT IN WHEELED AIRCRAFT

CL PILOTS AT SHANGHAI

PILOTS of cruiser and battleship-based aviation units—who sometimes call themselves the forgotten men of naval aviation—see a different kind of duty from the carrier boys and the land-based fliers. Take, for example, those on the *USS Duluth*, CL-87.

The *Duluth* has been in the Western Pacific since September. Its aviation unit was shore-based at Yokosuka, Japan, while the ship was operating from that port and moved aboard for the trip to China. After a short time at Tsingtao,

the *Duluth* moved down to the Navy berth in the Whangpoo river, on Shanghai's waterfront.

Anyone familiar with the Whangpoo can visualize the extreme difficulties that would be encountered should seaplane operations be attempted, with hundreds of junks, sampans, and water taxis criss-crossing the river.

It was anticipated that waterborne operations would either be impossible or impractical, or both, so two sets of wheels, usually used only in ferrying the SC-1 *Seahawks* in U.S. were



SEE WHY IT WOULD BE HARD TO FLY SEAPLANES IN SHANGHAI HARBOR? DULUTH AT ANCHORAGE



SEAHAWK IS LOWERED IN LCT HOLD FOR TRIP



CURIOUS CHINESE LINE ROUTE AS TRUCK HAULS SEAHAWK THROUGH NARROW SHANGHAI STREET; LOW PHONE, TROLLEY AND ELECTRIC WIRES A HAZARD

provided when the ship left the West Coast. The accompanying photographs, taken by Ens. Alan Hoff of the aviation unit, show some of the hard work required to make a landplane out of a seaplane.

Handling the planes aboard ship was not hard, but the trouble started when they were off-loaded into an LCT, then onto a flatbed truck at NOB SHANGHAI. This was followed by a hair-raising and somewhat dangerous journey across Shanghai to Kiangwan air base, a distance of 12 miles.

Major obstacles were low-hanging wires, pedestrians, rickshaws, Chinese truck drivers, and the layout of Shanghai routes, involving hairpin turns, narrow sidestreets and numerous natural hazards. Men were spotted at strategic points

on the planes, with fending poles and rubber gloves to ward off the wires. A Navy shore-patrol jeep, complete with Chinese policeman, was advance guard. The trip took 1 1/4 hours, the entire job being conducted four times, once for each plane going to the air base, and again 40 days later, returning them to the ship.

No damage was incurred by any plane or the city of Shanghai and the incident created great interest among the people lining the route.

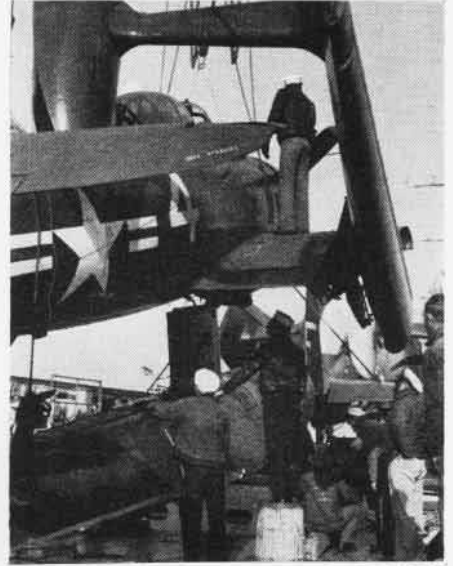
Time ashore was used to the fullest, with flight operations morning and afternoon, every day except Sunday, weather permitting. Pilots improved their cross-country proficiency took instrument hops and even made some GCA landings at Kiangwan, a chance few cruiser pilots get.



FUSELAGE IS LOWERED ONTO PLANE'S WHEELS



SAFE AT LAST, AIRPLANE ARRIVES AT FIELD



TAKING FLOAT OFF SC-1 TOOK SOME HARD WORK



HERE INSTRUCTOR CRANEY AMM1 GIVES THE WORD ON ENGINES TO RESERVISTS AT NAS MEMPHIS

RESERVE SPOTLIGHT

THE NAVAL Air Reserve is chalking up a fine record as a team of men, each of whom is contributing his particular talents to the program.

New working ideas for improving training, for speeding up maintenance and for aiding operations are constantly being devised by alert Reservists at stations throughout the country.

Out at NAS MINNEAPOLIS, for example, four O-2 men recently devoted much of their own time to working on a project in connection with communications training. They devised a system whereby students at code practice tables can send by tape machine, phonograph recordings and individual blinker lights at almost any rates of speed. Thus basic and advanced students can practice at the same time.

Tables are so wired that, if desired, students can send to each other and simulate command circuits. An intercom system provides ready communication with the instructor and with other students for voice procedure. Finally there is a two-way amplifier squawk box circuit between student and instructor.

Another Reservist at NAS MINNEAPOLIS, Davis, AMM1, has developed an operable exploded model of a PT-13-D-4 carburetor, that has proved effective in demonstrating diaphragm and poppet valve movement. Actuation of the throttle shows relative motion of throttle valves, acceleration pump and idle needle valve. Setting the mixture control indicates the position of mixture control plates.

Down at NAS DALLAS, A. L. Ashton, SADI, of the aviation technical training department developed a system whereby one man can operate eight Link trainers

(1-CA-1's) from a central point. Thus fewer operators are required to provide more pilots with this type of training.

On the maintenance side, members of the aircraft maintenance department at NAS ST. LOUIS have come up with two ideas recently that promise to save the Navy both time and money. The first, a screw with both left and right threads and a special nut with a left hand thread will be used on GCA equipment for tilting the rotating antenna. The other, a short-cut method for the manufacture of blind flying hood installations, has received favorable comment from CNO and has been forwarded to the Office of Naval Research for evaluation.

At NAS COLUMBUS, the engineering officer, Lt. (jg) Kennedy, designed a new type of control surface batten, which is said to represent a distinct improvement over existing models. This batten is made of hard maple and metal.

Using scrap material for all the parts, two Reservists at NAS GLENVIEW, L. B. Wheeler, AGC, and F. W. Scates, AGC, used their spare time to construct a weather board for the station which is a particularly good example of this type of device.

Indicated on this board, which is operated from the aerology office, are weather conditions at 100 reporting points, east to the coast, south to the Gulf and west to Albuquerque. The picture, taken of the board with its outside map covering removed, shows the cluster of small red, green and white lights behind each reporting point, one of which is turned on to indicate closed, instrument or contact conditions respectively at each point.

The control panel and board contain 14,600 feet of hook-up wiring and each of the 100 switches and light stations required three soldered connections. Despite all this, the two AG chiefs managed to finish the job in three weeks.

ANOTHER big responsibility that individual Reservists are taking upon themselves, in addition to their regular duties, is that of persuading new eligibles, who are vitally needed to fill existing quotas, to sign up in the Naval Air Reserve. Two aviation machinist's mates down at NAS MEMPHIS are doing an outstanding job in this line. One is Thomas Craney, AMM1, who brought in his 125th recruit way back last September and the other is Carmon R. Thompson, AMM2, who also has well over 100 recruits to his credit. Craney is head instructor in the aviation technical training department at the station and served aboard the *Croatan* during the war. NAS NEW YORK also claims an ace recruiter in the person of John S. Boyd, Y1, who as early as last December had persuaded 125 men to sign up.

Another pattern for real devotion to the cause is being set by some of the "long distance" Reservists. Top record for the man who has to travel the greatest distance to attend regular Organized Reserve drill is claimed by Lt. Cdr. L. A. Patterson, who has made the 770-mile week-end auto trip from his home in Buffalo to NAS WILLOW GROVE for two years with a perfect attendance record. Patterson, who is maintenance officer of Carrier Group 79-A estimates that he covers 18,480 miles yearly and uses a new car every twelve months.

Runner-up position is claimed by George B. Coddington of Pullman, Washington, a First Lieutenant in the Marine Organized Reserve. He drives 330 miles each way once a month for drill with VMF-216 at NAS SEATTLE and rates 4.0 for attendance since he joined the squadron last July.

P/A Unit Gets Underway

The Volunteer Reserve Pilotless Aircraft Unit under the Potomac River Naval Command, first and only unit of its kind to be organized to date, is now blazing a trail for Reserve training in this phase of naval aviation.

Utilizing classroom techniques, the course includes lectures by prominent specialists in the pilotless aircraft field as well as movies and demonstrations. Present plans call for the establishment of workshops for experimental purposes. This will permit disassembly of various P/A missiles and analysis of their components.

After general indoctrination in the description and operation of different types of P/A is completed, launching and recovery, guidance and components will be studied.

The P/A Unit, which is one of several units in Volunteer Brigade W-1 (Officers) and which meets on alternate Wednesdays at the Naval Gun Factory in Washington, D. C., is composed of 30 Volunteer Reserve Officers. CO of the unit is Lt. Cdr. James L. Ingoldsby, who is now a civilian project engineer in the target-drone branch, pilotless aircraft division in BUAER. Lt. Cdr. M. K. Ray, who heads up the liaison branch in the same division, is executive officer.

The picture shows Leonard P. Frieder, president of General Textile Mills Co., demonstrating parachute release mechanisms to unit members, Lt. V. J. Guethlen, Lt. Cdr. W. E. Weaver, Lt. Cdr. Ray, Lt. Cdr. B. Rubinstein, Lt. Cdr. D. J. Jones and Lt. (jg) Richard L. Pelzman.

We "Dip Our Wings"

TO NARTU NORFOLK—on commissioning the new AVU(A) at Richmond, Virginia, on 11 April. Principal speaker was Fleet Admiral W. F. Halsey who has been made an honorary member of the unit. Other speakers included Rear Admiral Ainsworth, 5ND Commandant and Governor Tuck of Virginia.

TO NAS NEW ORLEANS—on opening its gates to the second band of flood refugees in a year. On 6 March, at the request of the American Red Cross, 109 refugees from flooded suburbs were received aboard on one hour's notice. Bunks were set up, food prepared and medical personnel alerted for reception of the victims of the flash flood. An all-night security watch was maintained to care for the people. The last of the "visitors" returned to their homes on 11 March.

Station Round-Up

● NARTU LAKEHURST—Borrowing airships ZTG-6 and ZPK-38 from the station and using their own ZPK-124 as well, Reservists totalled 43 hours during March. A good part of the training was devoted to making practice landings and take-offs during both day and night operations. Enlisted flight crews were also checked out.

At present approximately 70 of the seamen recruits attached to ZP-51 are students at Admiral Farragut Academy.

● NAS DENVER—The AVU(A) at Salt Lake City is getting in more flight time than was anticipated. With seven days lost to weather, since the beginning of operations on



LT. (JG) DAVIS GETS PRIZE FROM CHIEF SMALL

6 March to 1 April, a total of 183.7 flight hours was logged.

● NAS DALLAS—The AVU(A) at Tulsa certainly went to town in its short period of operation during March. Ground training was conducted for 102 enlisted men for a total of 316 hours of instruction and for 121 officers for a total of 515 hours. In addition, pilots chalked up 162.1 hours in the air.

On the squadron front, VF-84-A made a grouped flight with fighters to Gainesville to make a mock attack on an abandoned bridge at Red River while VP-ML-53 had 100% attendance for enlisted men during March.

The new Enlisted Men's Club was officially opened on 29 March, with approximately 1,000 men and their wives present at the ceremonies. An *NA News* writer, who recently visited this station, reports that this club is definitely A-1.

● NAS OLATHE—To raise money for the Red Cross (and have a little fun on the side as well), this station recently conducted its own "Mystery Man Contest," which proved so successful that another one with bigger and better prizes followed. The first contest, which was won by Lt. (jg) D. E. Davis, was built about genial Chief Small. The jingle read: "My size doesn't matter" (meaning *Large or Small*). "My suit fits the moon." (Chief Small is—large, hence wears a large size suit, and moon is the mark for commissary work.) "A feather platter" (meaning an Indian beaddress worn by a chief or a platter upon which food might be served, thus indicating the galley or commissary

where Chief Small works), "Calls my name too soon" (merely a line to complete the jingle).

While all this was going on, Organized and Volunteer Reserve pilots flew 1513.9 hours during March, while 60 members of the AVU(A) at Hutchinson totalled 177 hours.

● NAS GLENVIEW—VR squadrons 60 and 61 have recently established a scheduled route over which they intend to operate each month; regular time schedules are now being written up.

March recruiting figures hit an all time high, with stationkeepers and O. R.'s rolling up 102 V-6 and 108 O. R. enlistments and 43 stationkeeper enrollments.

● NAS St. LOUIS—Good weather and a high aircraft availability combined to boost hours flown for the month of March to 1929 hours, more than double the figure for the preceding month.

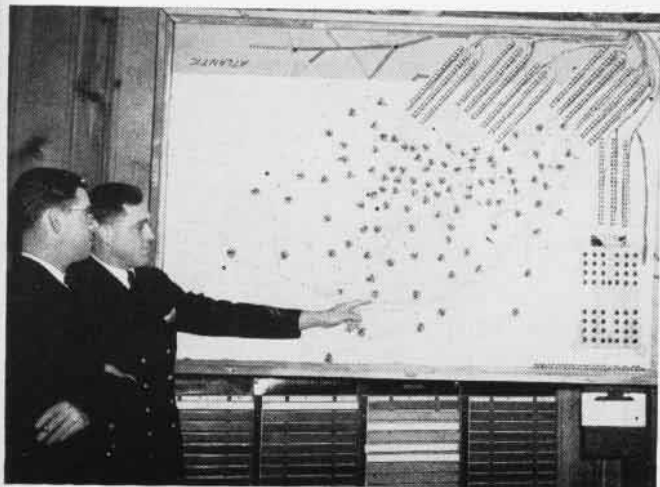
● NAS GROSSE ILE—Pilots at the Grand Rapids NARA piled up 135 hours of flying during March despite poor weather.

● NAS MINNEAPOLIS—On 30 March some 2300 personnel turned up for what was definitely a working annual inspection. "Old Man Winter" only gave the station a few days for a final sweep down and this activity was accompanied by training for the largest group ever attending a cruise period at the station. A total of 440 O. R.'s completed training and had to check out during the inspection period.

● NARTU JACKSONVILLE—Another son of a regular Navy officer has joined the Reserve. He is Robert L. Schmehl, SR, a student at Robert E. Lee High School whose father is assigned to NAS JACKSONVILLE.

● NAS SQUANTUM—Training duty for volunteer aviators commenced on 1 March and on 15 March. A total of 28 pilots completed the volunteer flight syllabus set up for the cruise. They flew a total of 638.5 hours for an average of 22.8 hours per pilot, making an extra cross country flight in addition to completing the 20 hour syllabus.

● NAS COLUMBUS—Reserve pilots on active duty have been taking advantage of the training offered by the GCA unit.



SCATES AND WHEELER LOOK AT WIRING BEHIND THE WEATHER BOARD MAP



L. P. FRIEDER SHOWS RELEASE MECHANISMS TO P/A UNIT OFFICERS



EVACUEES AT CHANG CHUN LOAD BELONGINGS IN MARINE RSC FOR FLIGHT



COL. LAMSON-SCRIBNER, MARINE LEADER, OVERSEES ENGINE PREHEATING

ORIENT ROLL-UP

News Item: Marine Transport Squadron 153 made 26 flights to evacuate 49 civilians and missionaries from the U.S. Consulate at Chang Chun, Manchuria, during February 2 to 6. It carried 42,330 pounds of cargo.

FLIGHTS went in various directions to and from Chang Chun, Tsingtao, Peiping, and Mukden. Extreme cold at the Manchurian airport made operations a little tough. The temperature was 40° below zero Centigrade at night and gradually worked up to around 18° below zero around noon.

Five members of the crew of one plane had to remain in Chang Chun, where they were billeted by the Consul. They slept on the floor in all their clothes, from 8:30 p.m. to 7:30 a.m. They had been up since 3 a.m. the previous morning, so it wasn't too hard to drop off.

Other sidelights of the evacuation operation, as reported by VMR-153:

1. The U.S. Consulate at Chang Chun received its first mail since mid-December 1947. A backlog of 600 pounds of pre-Christmas mail was transported to Mukden for the Consulate.

2. The outward appearance of the French male missionaries transported to Peiping was that they were hale and hearty. Four of them weighed more than 200 lbs.

3. Father Joly, 77 years of age, made his first airplane trip and did not experience any discomfort.

4. All passengers made the trips without experiencing any ill effects. However, Mr. Siebens had to pass out weeping towels to them in French, German, Chinese and English, when it became necessary for him to chop their personal baggage allowance and pets.

5. Several civilians who contemplated leaving Chang Chun for Mukden in a converted 1936 gasoline and charcoal-burning Ford stated that this was the best time to travel overland because rivers were frozen over. Practically all bridges in the area have been destroyed.

News Item: VMR-153 made 18 flights between Tsingtao, Peiping, and Mukden to carry 28 persons and 52,891 pounds of cargo to the U.S. Consulate at Mukden from February 9 to 12.

Sidelights of the operation:

1. One jeep from VMR-153 was flown to Peiping to provide mobility and self support to the ground operators at that field.

2. Occurrence of Chinese New Years during the operation necessitated turning the crews to as working parties due to lack of coolie labor. Galleys also were secured at Peiping and resulted in the crews proceeding to Mukden sans breakfast or lunches.

3. Twelve drums of aviation gasoline were transported. Due to lack of loading ramps, two jeep tires were laid on the ground and the barrels rolled out of the fuselage doors. The barrels would tumble into an upright position on the ground.

4. Much difficulty was experienced in loading and unloading a 2200-pound generator. No mechanical ground handling equipment was available.

5. At least one crew was not worried about a forced landing—it had 8,000 pounds of staple foods aboard.

6. The operations tower at Mukden directed one RSC into a 15-knot downwind landing. Due to poor visibility, three planes took waveoffs.

7. Unloading of some supplies at Mukden was supervised by a Japanese.

8. Twenty-one Chinese servants aboard one RSC became violently ill due to air turbulence and nauseated freely.

9. Chinese coolies unloading 6,900 pounds of flour at Mukden appeared as white men as a result of some bag breakage.

Recommendation: BUAER should develop electrical or thermal heaters for thermos jugs, relief tubes, and chemical toilets. All froze up even with cabin heaters on.

CHANG CHUN'S SNOW-COVERED AIRFIELD PRODUCED SOME PROBLEMS



MODERN-LOOKING OPERATIONS TOWER AT CHANG CHUN EVACUATION SITE





N.A. NEWS VISITS

NAS MIAMI

FLORIDA AIR RESERVES THRIVE IN RAIN OR SHINE

DOWN in the tropical land of the yacht, the bathing girl, fabulous ocean beaches and hotels, there is a naval air station whose Reserve pilots are not startled by such sights as float planes operating off the concrete runways.

The place is Miami, Florida, where the weather is always warm but sometimes over-wet. The float plane episode took place last fall when the hurricane which swept lower Florida drove three feet of water over the whole field.

Grasshoppers on floats were used on the runways to evacuate records of the Embry Riddle flying school which now occupies the NAS MIAMI which wartime aviators once knew.

One of the smallest Reserve stations, Miami now occupies Master field. The old Mainside was turned over to the town of Opa Locka. You'd never recognize the place now. Yellow *Cubs* fly off the runways instead of TBM's. The student BOQ's has signs like *Airways Hotel* and *Opa Locka House*. The town leased them out to private citizens who operate them as rooming houses.

The old gunnery training building is now an auto parts company. A grocery store occupies a building once used for storage. Only things left to the Navy are one BOQ where "visiting firemen" to Master field are billeted and the officers' club. There is a quiet about the once-bustling air station that is depressing to wartime pilots.

But over at Master Field, the Reserve headquarters are busy enough. Probably no Reserve station has as many



'FOLLOW ME' JEEP IN FRONT OF MASTER FIELD CONTROL TOWER, MIAMI

diversified activities to keep track of as Miami since it is the only Navy activity in that area.

For instance, besides taking care of Reserve aviation, the station has to stock the refrigerated ship YP-629 once a month with provisions for Guantanamo, the Army in Jamaica and Navy forces in the Caribbean. Vegetables and meats from the supply department, in the amount of 30 to 40 tons a month, are kept in cold storage until the ship is ready to load. Navy ships which come to Miami have their berthing arranged for by the air station.

Being the only Naval activity, it takes care of transportation and looks out for visiting gold braid on the Caribbean run. Ships bringing members of the ship Reserve south on their annual training cruises are taken care of by the air station. Until recently the regular Navy meteorological squadron, VPW-3, was based on the station for its flights.



CAPT. HUNTER TALKS TO ADM. WHITEHEAD AND CAPT. NEALE, ATLANTA



ENS. P. H. GEORGE AND LEROY COPENSPIRE, SADI, CHECK LINK CHART



In a setting reminiscent of the South Pacific's palm-fringed islands, Reservists at NAS MIAMI march past reviewing party

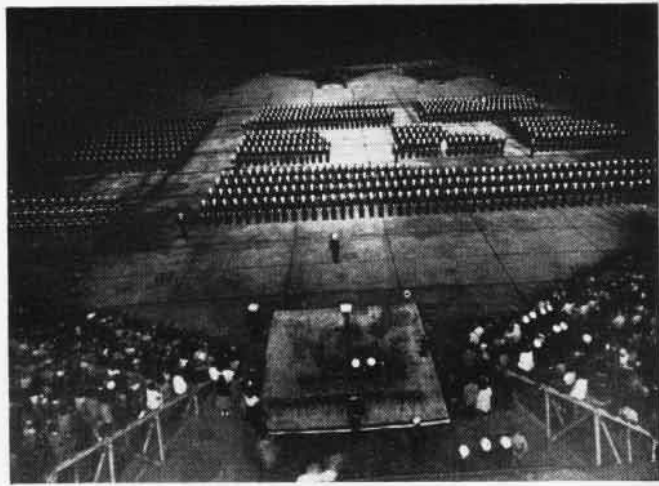
WHEN hurricanes come to Florida, Miami always seems to play its big part in the work of rescuing persons marooned by the floods. Last September, the PB4Y-2's tracked the terrific blow which swept in. Thanks to advance preparation, not much damage was inflicted at Master field. Planes were stored in hangars at Mainside and Master.

As soon as flying was possible again, Reserves went out to scour south Florida to report persons marooned on rooftops or cattle threatened with drowning, aiding the Coast Guard in its searches. Mobile radio gear was thrown into the job and refugees were housed in the old barracks on Mainside. Food furnished by the Red Cross was prepared by Master field galleys. A total of 639 persons had to be fed for several weeks until the water subsided and they could return to their mud-filled homes nearby. A month later another hurricane approached but no damage was done when it swerved to another area.

Physically, Master field is one of the best airports in the southwest. It was started before the war to be Miami's international airport and was designed to be the biggest in the U.S. Its two east-west runways are 5,000 feet long and two diagonal runways are 7,000 feet, big enough to handle *Privateers* and any other size plane the Navy wanted to bring in. Since the weather is usually good, no GCA installation is at Miami (California papers please copy).



Flying over Florida keys takes briefing; here pilots Payne, McGaffigan, Poor, Duffy, Wilson, Chickering, Darden plan



Unusual night photo shows NAS MIAMI turned out for inspection by Rear Admiral Whitehead, while 1500 looked on

When the old Navy municipal field, wartime base of VR-7, was rededicated recently and named for Amelia Earhart, the Reserves at Master played a part in the ceremonies. Miss Earhart started her fatal flight from that airport.

When the All-American Air Maneuvers, second largest air show in the country, are held at Miami, Reserve pilots participate, making fly-overs and mock attacks. Army, Navy and Marine units taking part in the show base at Master while in the South.

Although it is one of the smallest Reserve activities, Miami led the command in V-6 recruiting in June 1947 and has been near the top consistently. It took in 200 enlistments and reenlistments during June, despite the fact it has only about 280,000 population in Miami area to draw from. During 1947, 1169 reenlistments were handled.

Its 50 planes are kept in flyable condition a high percentage of the time by the two FASRONS on the station. The safety record of its pilots puts Miami in the upper third among Reserve stations. A stationkeeper complement of 286 men and 28 officers, plus three Marines, services the four Navy and one Marine squadron.

Skipper of the Reserve station is Capt. Robert N. Hunter. He won the Navy Cross, Legion of Merit and Bronze Star for combat action in the Philippines and Palau campaigns. He was skipper of the CVE *Kadashan Bay* then and after



Believe us, mates, this is the main runway at Mainside; off this hurricane-flooded spot, airplanes on floats were flown



Christianson, Rudich and Jones man control tower to guide Miami Reservists



Cdr. Ted Harding, weather hurricane head, instructs Lt. Hsiao, Chinese Navy



Reservist F. F. Jones in Navy's *Weasel* rescues load of Miami hurricane victims

the war was CO of the *Boxer*. Cdr. William L. Cleveland, his executive, was personal pilot for Admiral Halsey during the war. He formerly was exec of NAS MIAMI and has been active in the USNR for 29 years.

Senior type training officer is Lt. Cdr. F. D. McGaffigan. He skippered such squadrons as VB-306, VB-150 and VB-153, which saw action at Bougainville, Majuro, Saipan, Eniwetok and on the *Lake Champlain* and *Kearsarge*.

His assistants are Lt. Cdr. F. M. Duffy, VF flight training officer; Lt. Cdr. Henry E. Lee, VT-ML type training officer; Lt. Max E. Moore, VA flight officer and Lt. N. Popa, flight officer for FASRONS 61 and 161.

Miami was one of the first naval air stations in the country. It started out as a seaplane base at Dinner Key south of town in January, 1918. Twelve seaplanes and two dirigibles operated there. Wealthy property owners complained about the noisy early morning flights after the war was over but the station was continued for a time as a training base. Economy forced its closure in 1919.

A Naval Reserve Air Base was constructed inland at Opa Locka in the 1931-39 era, using WPA funds. The city built a hangar and other buildings. When World War II

neared, flight training started there in 1940, two months after it was commissioned a NAS. Cdr. G. F. Bogan, later a vice admiral, was its first skipper.

Planes that flew there included F2F, F4B-4, SBC, F3F, TBD, BT and F2A. Later it became an advanced operational training station and based SBD, TBF and PB4Y squadrons.

Reserve pilots at Master occasionally have experiences a little out of the ordinary. Capt. Hugh M. Price made several passes in his *Hellcat* at a DC-6 on a training flight, forcing the pilot to return to the field where he discovered the oil leak in one engine which Price has spotted.

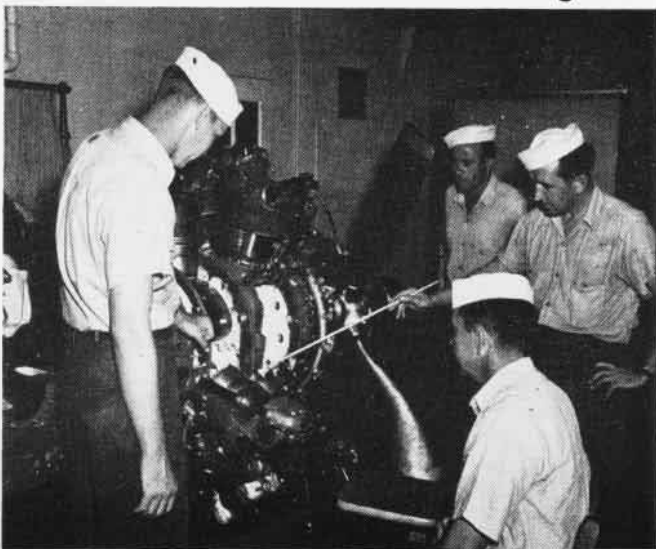
A Reserve electronics technician, Edward H. Cheatham, volunteered to help man a Coast Guard PBY that was going out to the Bahamas to hunt for a lost cabin cruiser. His brother was aboard the boat. Twenty planes participated in the search, but it was not found.

MIAMI AIR RESERVE SQUADRONS

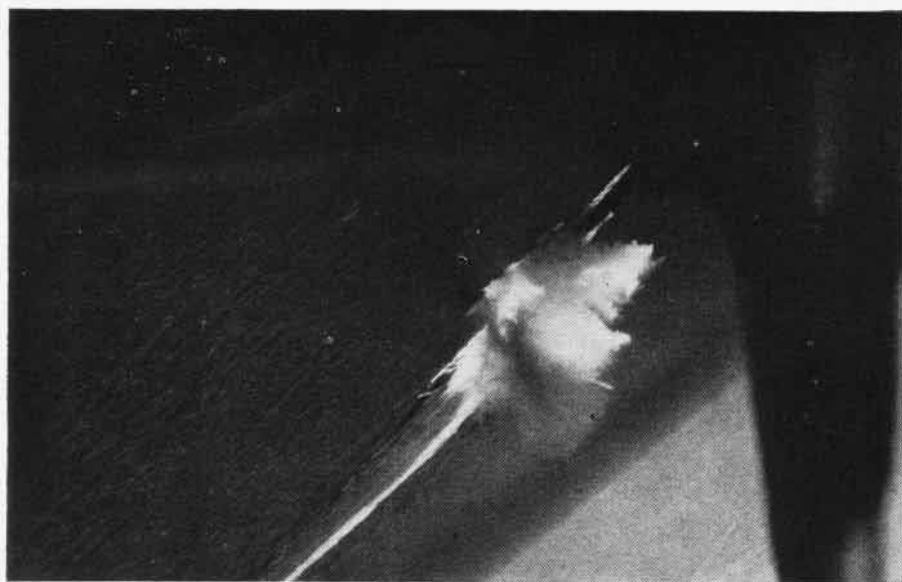
CVG-81—Lt. Cdr. H. M. Darden, CO.
VF-81-E—Lt. R. C. Wilson, CO; Lt. J. P. Scherer, Exec.
VA-81-E—Lt. Cdr. H. M. Darden, CO; Lt. Cdr. Rex W. Nelson, Exec.
VMF-142—Lt. Col. R. F. Smith, CO; Maj. H. S. DuVal, Exec.
VP-ML-60—Lt. Cdr. H. W. Connelly, CO; Lt. J. H. Shaffer, Exec.
FASRon 61—Lt. Cdr. R. B. Huffman, CO; Lt. Cdr. Jack Ott, Exec.
FASRon 161—Cdr. G. V. Blackmore, CO; Lt. Cdr. John A. Fiske, Exec.



Reservists Harrison, Grubbs, Smith and Roberts, all combat aircrew veterans, use decorated work gloves to fight the war



Machinist's mates H. J. Smith, A. S. Rey, G. Gowman and C. H. Mott study cutaway engine at Miami tech training



A TBF FROM THE USS FRANKLIN ATTACKS A JAP SHIP BEFORE THE BATTLE OF THE SIBUYAN SEA



SKIPPER FRENCH LANDS AFTER A BOMBING HOP

TORPEDO SQUADRON THIRTEEN

TORPEDO Squadron Thirteen, masters of the art of launching shroud ring torpedoes, were just what Uncle Sam ordered—bad luck for the Japanese.

In the four months of combat on their first tour, they hit the enemy in fury. The deadly effectiveness of their attacks made their insignie appropriate—a snarling black cat astride a launched torpedo, the whole superimposed on a four-leaf clover.

The months of training together from 1 November 1943, when the squadron was commissioned at Quonset Point, R. I., to 30 June 1944, when it entered combat, paid off in a punch-packed campaign that reached its climax in the Philippine waters the end of October.

When the squadron demonstrated the use of a new shroud ring torpedo before high ranking Naval officers and officials at Maui, T.H., in June 1944, so impressive was the performance that Air Group 13 was ordered at once to the combat area aboard the USS *Franklin* without waiting to complete the night flying course. A squadron like this had what it took, and the Japanese should get it immediately, full blast and head on!

On the Fourth of July and the day following, the squadron made its first contact with the enemy in strikes against Iwo Jima and Haha Jima in the Volcano and Bonin Islands. "Oh, how various was the scene!" Ground installations with aircraft parked nearby, supply depots and warehouses, anti-aircraft gun positions, radio station and runways—all these were hit and hit hard in the face of AA fire. VT-13

proved it was ready for battle.

Between the 14th and the 22nd, VT-13 flew missions in preparation for the invasion of Guam and supported landing operations. Early in the morning of the 21st, Lt. E. W. Larkin and Lt. N. D. Champlin led two strikes which bombed and cleared the beach-head areas just prior to the landing of the Marines. Much was at stake! "Mission accomplished" could be chalked up on the record for VT-13, because the bombs laid in rows just back of and parallel to the beaches wiped out the concentrations of guns and troops which the Japanese had moved into position during the night. The Marines landed with a minimum loss of life, and the invasion of Guam was an accomplished fact.

Thus early in the 156 days which VT-13 spent in the combat area, the squadron established itself as an aggressive, accurate bombing unit. All in all, the squadron flew 794 sorties in 112 strikes for a total of 3,744 combat missions, and the squadron dropped 2,896 bombs—514.5 tons—on the enemy. After helping drive the enemy from Guam, it supported the invasion of Palau and participated in the operations against Yap, the Nansei Shoto islands, the Philippines, the Japanese fleet in the Sibuyan Sea and the Battle for Leyte Gulf.

In addition of the scourge of destruction inflicted on Japanese-held land positions, the squadron, true to its designation, sank 13 merchant ships

★ *THIS IS the sixth of a series of short sketches of squadrons in World War II. It is based on reports filed with Aviation History and Research DCNO (Air).*

totalling 62,500 tons, one 5,000-ton cruiser, and assisted in sinking three enemy light cruisers. It chalked up six other merchant ships as "probables." In the climactic days of 1944 when the United States was on a full scale offensive in the Pacific, VT-13 was there, packing the Navy punch with airpower.

ON THE 26th and 27th of July, strikes were flown against the islands of Babelthau and Koror in the Palau group. The first strikes of the operation were directed against the airstrip on Babelthau.

Strikes against Koror were aimed against the town, anti-aircraft guns, supply and storage areas, ammunition dumps, barracks and dock areas. Koror town was burned out. During these operations, the Japanese stepped up the tempo of their AA fire. Hardly a pilot in the squadron escaped having his plane holed at least once. A particularly successful attack which destroyed warehouses and docking facilities on one pier was led by Lt. F. W. M. Janney. Thus VT-13 set the stage for the invasion to come.

It was on 4 August that the new-type shroud ring torpedo was first used in an attack that proved its merit beyond question. An enemy convoy was sighted northwest of Chichi Jima. Lt. Cdr. L. C. French, commanding officer, led his men into action. Each of nine planes launched a torpedo. All nine torpedoes ran hot, straight and true to score nine direct hits and send four 5,000-ton merchant ships to the bottom. Nine DFC's were awarded the airborne sharpshooters for this feat.

On 1-2 September, VT-13 struck Iwo Jima when it had not yet completed repair of installations damaged by two previous raids. The remaining installations were attacked and heavily damaged. It was during this strike that Ens. Thomas Keene and his crew, J. T. Stowall, AOM3C, and J. R. Doherty, ARM3C, were shot down over the island. Tommy made a good water landing, and five and one-half hours later the men were rescued by submarine. They were not able to return to their squadron immediately because they had to spend the next 30 days aboard the submarine while it made attacks on enemy shipping. Many depth bombings, fortunately unsuccessful, made it a real shake-down cruise for the airborne D.P.'s who were glad to exchange "the bright blue yonder" for the ocean deep when at last they returned to their squadron.

From 10 to 18 September, VT-13 made strikes and supported missions against Peleliu and the Angaur and Ngesebus islands in the Palau chain.

By 10 October, the squadron operating from the *Franklin* as a part of the Third Fleet, was striking Yontan airfield, Okinawa. Again these demonstrators of the shroud ring torpedo had a chance to exhibit its effectiveness. One attack led by Skipper French and "Jug" Janney sank three medium merchantmen off the west coast of Okinawa, and another led by Champ Champlin seriously damaged two ships in the harbor of Naha Town. By evening all available targets in the area were blasted, and orders were given to wipe out Naha Town. The combined attack of all squadrons carried this edict into effect, and incendiaries dropped by VT-13 led by Lt. R. B. Cook set a triumphal blaze to climax these operations.

Moving south the Third Fleet next attacked Formosa on the 12th and 13th of October. VT-13 was assigned the Tainan-Takao section of which the principal targets were enemy shipping and aircraft. A torpedo strike led by Lt. P. E. Pritzlaff and Lt. Champlin sank two medium and two 2,000-ton merchant ships.

In the course of operations, Skipper French led two strikes against the air-



VT-13 LEAVES NAHA CITY, OKINAWA, AFIRE

plane assembly plant near Okayama Field and numerous hits were scored on the buildings. Photographs later showed many of the buildings being destroyed or burned out. Again "Jug" Janney led an attack which leveled warehouses and barracks. Lt. Cook, in spite of weather conditions that might have blocked anyone else, attacked the largest alcohol plant on the island with the sureness of a revenue agent. All in all, VT-13 was piling up the record of destruction.

The first strike against Luzon on 15 October was flown without a fighter sweep going in ahead to clear the air of enemy planes. So VT-13 pilots fought their way in to attack Nichols Field and fought their way back. J. R. McGee, AOM2C, C. A. Gatto, AMM2C, and E. Dodge, AMM3C, were credited with probably destroying three enemy fighters in the air; and P. Sanchez, AOM2C, D. J. Fleming, AOM3C, W. A. Shelton, AMM3C, and A. H. Berner, ARM2C, damaged others. The attack which destroyed many Japanese aircraft on the ground was highly successful.

Additional strikes were launched on the following days against aircraft and installations on Nicholas, Clark, Nielson and Legaspi airfields. Champlin led one attack on Clark Field, arriving there just as enemy fighters were taking off. Diving to low levels, VT-13 laid bombs in strings across the runways. Not only did they destroy planes, but they wrote "finis" to further launchings.

Then on 18 October, Skipper French set a new record for destruction when he led the first anti-shipping strikes against ships in Manila Bay. Launching his torpedoes, his planes destroyed a floating drydock, sank four medium merchant ships and one medium oiler. No other two four-plane division attack by torpedo planes, it is believed, ever achieved so high a score.

On the 24th of October, preparations were made to attack units of the Jap-

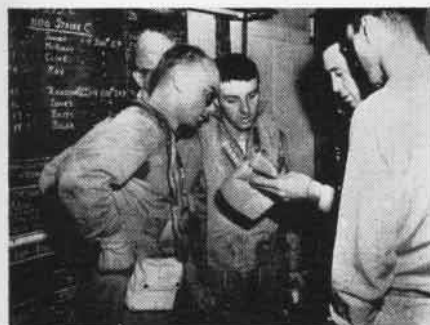
anese fleet consisting of 4 or 5 BB's, 6 to 8 cruisers, and 10 to 14 DD's. In the afternoon, ten planes of the squadrons flew 250 miles before sighting the ships in the Sibuyan Sea. The planes flew through terrific AA barrage to make the attack. Lt. R. W. Ranson became separated from the rest of the flight and emerged from a cloud to find himself alone over the ships. His plane was hit almost immediately, the gunfire carrying away his entire starboard elevator and horizontal stabilizer. Regaining control of his plane, he attacked a Japanese warship, the torpedo exploding amidships. The remainder of the flight made a split attack on a 45,000-ton BB, and at least three torpedo hits were scored. As the planes turned to retire, the plane of Lt. R. H. Clive and his crew was seen in flames headed for enemy ships.

That night, another enemy force consisting of 4 or 5 carriers, 2 BB's, 4 cruisers, and 6 or 7 DD's was reported. The Third Fleet moved northward to intercept these units. Since the supply of torpedoes had run out, VT-13 loaded with armor-piercing and SAP bombs and took off. Champlin led one strike 104 miles to score 3 hits with 1,000-lb. SAP bombs on a CVL. Another hit was made on another CVL. French led the second strike and scored two hits on the stern of a CVL. "Jug" Janney led a third strike to score three direct hits and two near misses, the force of the explosions heeling a CVL over to starboard and 30° off course.

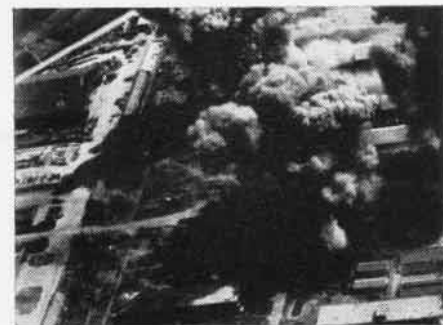
It was in this battle that the combined air groups of the Third Fleet sealed the Jap carriers of the enemy safely in Davey Jones' locker.

The first tour of VT-13 was over, and the 28 pilots and 67 enlisted men were homeward bound, worn by battle, happy in victory.

By the time the second tour was ready to report to combat zones, VJ-Day had arrived. Thus by a narrow margin, the Japanese homeland avoided the kind of destruction VT-13 was trained to inflict. The Japanese escaped — 13 for luck in this case — a second round of deadly torpedoes launched by a mighty carrier-based squadron.



ACI OFFICER QUIZZES ZENDER AND CHAMPLIN



SMOKE MARKS FORMOSA SPOT WHERE VT-13 HIT



Bearcats and TBM's squat on *Valley Forge's* flight deck as she lies at anchor in Hong Kong's picturesque harbor

When the *Saipan* visited Venezuela in February, Regulars and Reservists aboard put on a GQ and fired 20's and 40's

WORLD CRUISE ON A CARRIER

THE NAVY has been making good its recruiting promise to "see the world" in a big way of late, at least for crews of aircraft carriers. The *Valley Forge*, after serving in Asiatic waters for some time, headed west to Singapore, Ceylon, the Persian Gulf and Suez Canal.

Following a call to Gibraltar, it went to England, and then to Bergen, Norway. A trans-Atlantic trip through the Panama Canal to San Diego closed its "tour." The three escort carriers *Rendova*, *Siboney* and *Palau* visited Yesikoy, Turkey, while delivering former Air Force aircraft to the Turks. The CVL *Saipan* paid Venezuela a visit while the *Midway* toured the Mediterranean.



The Old Look meets the New in Hong Kong harbor as the CV *Valley Forge* passes Chinese junks; it wasn't long ago that *Hellcats* were shooting Jap ships like them



WHEN THE SAIPAN VISITED VENEZUELA, MILITARY PERSONNEL OF THAT COUNTRY GOT TIPS ON LANDING ON A CARRIER FROM CDR. F. B. HOPKINS

TECHNICALLY SPEAKING

MONEY-WISE

INTEREST in money is considered a healthy condition. We therefore have every reason to believe that air stations and facilities are in an extremely healthy condition, judging from the number of inquiries received from operating activities regarding the method employed by the Bureau of Aeronautics in administering funds for the maintenance and operation of naval aviation.

The term "Naval Aviation" covers everything that flies and everything on the ground necessary to keep the airplane in flyable condition or to get the craft back up in the air and keep it there. "Naval aviation" includes aircraft in the Regular Navy and Air Reserve, Marine Corps and Marine Corps Air Reserve.

The responsibility of keeping planes in the air falls on Maintenance and Operation. That is the ground cog in the wheel. It is the unspectacular, stabilizing force which injects itself into every cranny of aviation from blimps to jets—from original receipt of aircraft through safety of flight, and finally bidding farewell to an old craft on its way to salvage or air museum.

This responsibility for Maintenance and Operation starts immediately upon receipt of an airplane by the Navy. The responsibility goes beyond keeping a plane airworthy. It supplies the support necessary to maintain all naval air stations, air facilities, training units, Assembly and Repair departments, and the Naval Aircraft Factory. Items such as flight clothing, parachutes, tires and tubes, shop equipment, ground handling equipment, and those thousands of miscellaneous items that one puts his fingers on in any facility or station are part of the planning and responsibility of Maintenance and Operation. They must envisage all requirements down to the last drop of gasoline and oil and provide the necessary pay for all civilian labor.

Under the overall military budget, the funds to accomplish the mission of "Maintenance and Operation" are a part of BUAER's budget and are dependent upon the appropriation granted by Congress each fiscal year.

The funds appropriated to Maintenance and Operation are set up in several categories to cover procurement of all

the required services, supplies, materials, and equipment. A portion of these funds is allocated to the Aviation Supply Office, Philadelphia, for procurement of various technical aeronautical supplies, equipment, and materials for distribution to naval activities concerned with aircraft. The Aviation Supply Office acts as the principal supplier for Maintenance.

The Bureau of Aeronautics also procures certain items of a technical aeronautical nature. Normally, all materials purchased by ASO and BUAER are known as APA—Appropriation Purchases Account. No APA material is ever charged to any allotment issued to field activities. One purpose of BUAER allocation is to prevent a gap in the maintenance supply system in the field, by furnishing items for service test or supply approved items which have not as yet been placed in ASO supply system for distribution.

Other portions of these funds are set up to cover Aviation Navy allotments granted to fleet and shore activities. These are known as "A" allotment, for Maintenance of Stations; "B" allotment, for Operation of Aircraft; "C" allotment for Overhaul of Aircraft, and "D" allotment for special purpose projects.

The "A" ALLOTMENT—MAINTENANCE OF STATIONS, is best described as the overhead allotment or housekeeping fund. This allotment covers recurring day-to-day maintenance of runways, taxiways, hangars, shops, roads, ramps, buildings, and other facilities comprising an air station; operation of station utilities and service departments, including power and heating plants, sewage disposal plants, warehouses, dormitories, and transportation facilities; overhead of all station activities, including projects financed under other programs, exclusive of certain shop overhead within the major assembly and repair facilities.

Most of the important aviation programs under BUAER receive a substantial part of their support from the funds provided by this program. Except for certain shop expenses in the case of assembly and repair work, the production, overhaul, flight operations, and research and development programs are depend-

ent on this program for all non-direct costs. In particular, supervisory, leave, and holiday pay, power, station administration, and other indirect costs essential in carrying out these major programs are chargeable to allotment "A".

The operation of aircraft and the functions of the Assembly and Repair departments are not considered overhead or housekeeping functions and are consequently not chargeable to the "A" allotment. They are described under the "B" allotment and "C" allotment following.

"A" Allotment—Maintenance of Stations—is under direct cognizance of the Bureau of Aeronautics Shore Establishments Division. "A" allotments are granted only for aviation activities of the Shore Establishment and not to the Fleet.

The "B" ALLOTMENT—OPERATION OF AIRCRAFT, covers all costs of Naval Stock Account Supplies withdrawn for operation and line maintenance of aircraft. To prevent confusion with coverage in "A" allotment, it is important that the foregoing sentence be stressed again—"Covers all costs of Naval Stock Account Supplies withdrawn for operation and line maintenance of aircraft." This is to differentiate between Naval Stock Account Supplies mentioned in the above paragraph which are withdrawn for Maintenance of Stations and are chargeable against the "A" allotment.

The supplies withdrawn to support the Operation of Aircraft include gasoline, oil, and other items necessary to keep the planes in the air.

Line Maintenance includes those functions involved in the actual maintenance of the aircraft which are presently accomplished by "operating" activities. Broadly speaking, this covers the 30-hour, 60-hour, and 120-hour checks, engine changes, and the general operations performed under Line Maintenance.

APA supplies and materials used in the operation and line maintenance of aircraft are never charged to "B" allotment, having been previously procured by, and paid for, out of the allocation granted the Aviation Supply Office or the Bureau of Aeronautics. Likewise station civilian labor is *never* charged to the "B" allotment.

Fleet units operating aircraft are granted "B" allotments by cognizant

command—ComAirPac or ComAirLant. Shore activities are granted separate "B" allotments directly by the Bureau of Aeronautics for "Regular Navy and Naval Air Reserve" purposes.

The "C" ALLOTMENT—OVERHAUL OF AIRCRAFT, is granted to Class "A" naval air stations having an Assembly and Repair department to cover the cost of all work accomplished by the A&R. Included in this coverage is the pay for civilian labor, Naval Stock Account Material and provision for local procurement required in the repair of all aeronautical equipment directly related to the actual overhaul of aircraft or engines. Both "B" and "C" allotments are under the direct cognizance of the Maintenance Division, BUAER.

It will be noted that these three allotments "A", "B", and "C", granted to cover the cost of naval aviation are in substance expended on functions which are of a recurring nature or what can be considered a day-to-day expense.

The "D" ALLOTMENT exists for the express purpose of providing funds for those items, projects and jobs which are in the nature of a non-recurring or one-time cost category. These non-recurring items include such things as outfitting squadrons, FASRONS—Fleet Air Service Squadrons—minor building construction such as setting up shop, major repairs and similar items. A squadron or FASRON requires complete outfitting only once, and the cost of setting up a specific shop occurs only once. Therefore, the cost of a non-recurring item is not normally charged against an "A", "B", or "C" allotment, but is financed by granting funds under a "D" allotment.

"D" allotments are granted in somewhat the same manner as allotments "A", "B", and "C", but are granted only upon request to finance a certain special job which is not in the category of a day-to-day expenditure, or of a recurring nature.

At the present time, some of the items mentioned in the "D" allotment above are being financed by Project Orders. It is not the intention of this bureau that this practice be continued, and upon the expiration of existing Project Orders, the "D" allotment will thereafter finance all special tasks unless the task falls in the category of Project Order sponsorship as set forth below.

PROJECT ORDERS, which are similar to "D" allotments, are granted for specific projects that require a longer period of time for completion than the "D" allotments, which expire at the close of the fiscal year.

One large item which should be mentioned here is the pay of military personnel. This is never, in any case or

under any condition, charged to any allotment of funds or project order issued under the appropriation "Aviation Navy."

FROM THE foregoing it can be seen that funds appropriated for naval aviation are specifically earmarked by Congress to meet the needs of an individual allotment. The funds cannot be used indiscriminately by the Bureau of Aeronautics to meet unforeseen problems which might arise during the months following the granting of the appropriation by Congress.

Neither are funds transferable from one allotment to another. Allotments "A", "B", "C", and "D", as well as all appropriations, are closely scrutinized and analyzed by Congress. If that body feels the need of decreasing expenditures for one allotment or increasing the funds for another allotment, it is ultimately reflected in Maintenance of Stations, Operation of Aircraft, Overhaul of Aircraft, and Project Orders. No station, facility, or activity is permitted to use the funds granted for one allocation to meet any condition or expediency the nature of which is covered by a different allocation.

Lift Solves Tank Problem

VMF(N)-542, EL TORO—This night fighter squadron figured out a good way to remove and replace 300-gallon center line fuel tanks weighing about 1,950 pounds when loaded. Removal was necessary to permit access to the fuselage area directly above the tank which contains the radar gear.

In the past it was the custom to drain the tank, then manually remove the tank until radar maintenance personnel had finished their work. The tank then was replaced and refilled. The cumbersome task of removing and replacing the tank frequently resulted in damage to the brackets or the tank.

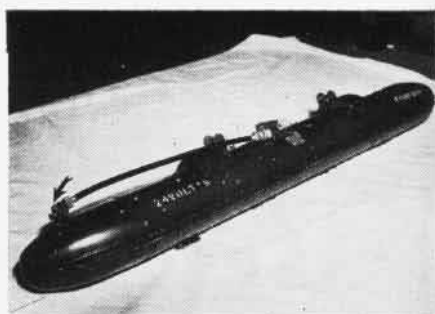
The process normally took about 1½ hours including use of a refueling tank for 45 minutes and services of seven men. To speed this up and make the job of removal safer, the NCO in charge of the metalshop devised a lift which cut the time to 15 minutes and saved five man-hours a plane.

The lift was made of angle irons joined together by arc welding. The lift is used with a standard aircraft tail jack. It was tested to hold well over a ton.

▲ **BuAer Comment**—A timesaver for a difficult job. Activities desiring to fabricate this lift should request sketches from the squadron.



PICTURE SHOWS LIFT WITH BELLY TANK LOADED



ELECTRICAL CONNECTION PUT AT END OF RACK

Bomb Rack Change Is Made

VMSS-12, EL TORO—Ordnance shop has modified the Mk 47, Mod 2 practice bomb rack so that it can fit onto the pylon without placing too much strain on the angle housing assembly of the electrical conduit.

The change is valuable when the rack is used on F4U-4 aircraft. The housing often was bent or broken because the chocks of the pylon rested against it. The change made was to reposition the housing from the starboard side of the center of the rack to the extreme aft end of the rear inspection plate where the angle housing assembly of the electrical conduit is secured. The change requires about one man-hour a rack.

▲ **BuAer Comment**—This modification is satisfactory. A new practice bomb container Aero 4A will be available for fleet use by the end of 1948. This new unit will do away with many of the objectionable features of the Mk 47 rack.

Marines Shoot at Dye Spot

VMF-211, CHINA—Effective bombing and rocket training are difficult because of lack of a suitable target, so this squadron has been forced to use dye marker on the ocean.

Two aircraft in each division, one of them an alternate, are loaded with 100-lb. practice bombs filled with dye marker. The extremely cold and rough water creates many difficulties. Ordnance must keep the bombs filled with the dye in a heated room before loading, but the contents freeze when airborne.

Also rough weather and swift currents soon disperse the dye marker. However, in lieu of a suitable target, this practice has proved passable.

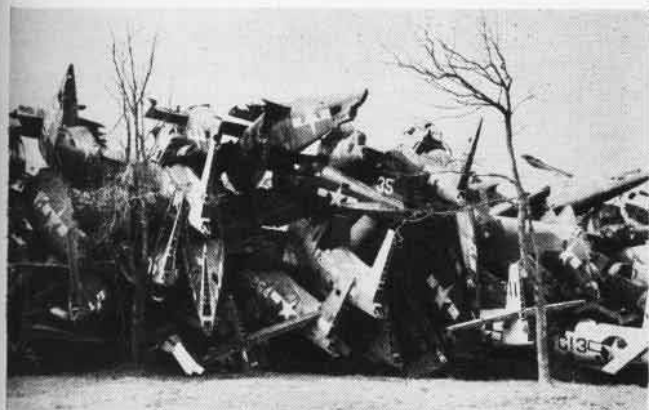
Clamp Secures Cowl Flaps

NAS SAN DIEGO—An employee of this station, R. S. Johnson, Snapper, Metalsmith, has developed a securing clamp for F4U-4 cowl flaps which constitutes an improved method in handling operations. Damage prevention and convenience in handling operations, such as overhaul, transportation, and storage, have resulted from use of the suggested clamp, NAS SD SK 1-18074.

Two of these clamps are used on each F4U-4 cowl flap ring, VS-40636. One clamp is clipped on two flaps, thus securing the five flaps on each of the two ring sections. These clamps are removed after installation of assembly on engine, and returned for re-use in the overhaul system. In case of storage or shipment, however, they would remain in place.

Activities interested should write to NAS SAN DIEGO for further information, if needed, and for a copy of blueprint SK-1-18074.

Navy Guillotine Chops Up Planes for Salvage



ONCE SCOURGE OF JAP AIR FORCE, NAVY PLANES NOW MAKE JUNK YARD

THE JOB of beating swords into plowshares—or maybe it's chopping airplanes into aluminum ingots—is underway at NAS NORFOLK. They are using an electric "guillotine" to cut up the war-wearies and struck planes so they'll fit into the smelting pots.

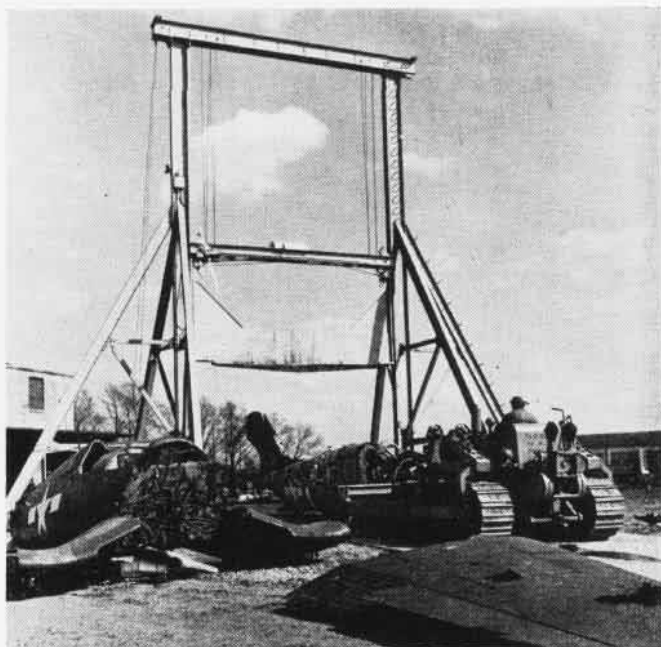
Public Works engineers designed the "chopper" out of wartime surplus and scrap material. Its large cutting blade is made of two thicknesses of 2" armor steel. Dropped from a height of 26' on the fuselage, the 600-lb. blade achieves a terminal velocity of 26 mph, slicing the plane into sections like a hot knife going through cheese.

The inside width of the guillotine tower is 17', capable of handling any size naval aircraft, including PBM hulls. Previously, the Navy had to use burning torches to reduce the planes to a size where the smelting pots could handle them.

Four men can handle 16 planes a day with the new device, compared to one man having to use a torch a whole day to cut up one plane by the old method.

During fiscal 1947, the Norfolk salvage yard picked up \$514,540 from sale of salvaged material. Deducting labor cost and materials, net profit was \$405,000. The yard employs 48 civilians.

VARIOUS public schools have received salvaged material originally valued at two and a half million from the



6100 POUND CHOPPING BLADE DESCENDS TO CUT FUSELAGE OF AN 5B2C

Navy scrap yard. This included electronics gear, photographic supplies, cameras, binoculars, electric motors and shop equipment.

A total of 161 railroad cars full of salvaged material has been shipped from the yard the past eight months. Salvaged material consisting of heavy steel, light iron, aluminum ingots, condemned tires and other metals has been the major recovery. All scrap batteries and other material containing lead is stockpiled for future use by the armed forces in event of a national emergency.

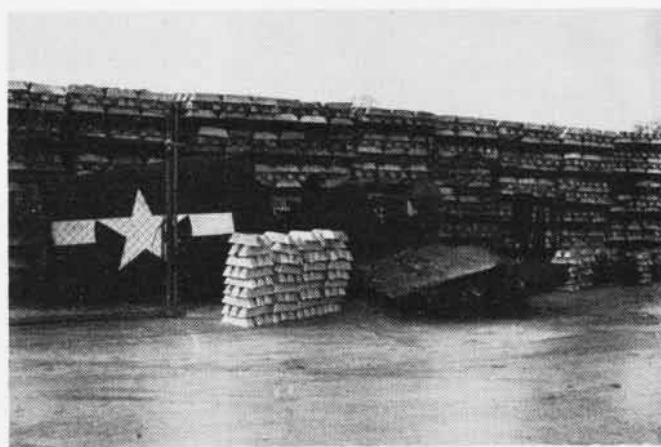
A total of 161 railroad cars, with an overall weight of 9,012,218 pounds, have been loaded and shipped from the scrap and salvage yard in the last eight months. During fiscal 1947, a total of 397 railroad cars with a combined weight of 17,209,460 pounds of scrap and salvage material were loaded and shipped to buyers throughout the country.

Although the receipt of material at the yard has shown a considerable drop this year, an increase in sale prices is expected to result in substantially the same revenue as received last year.

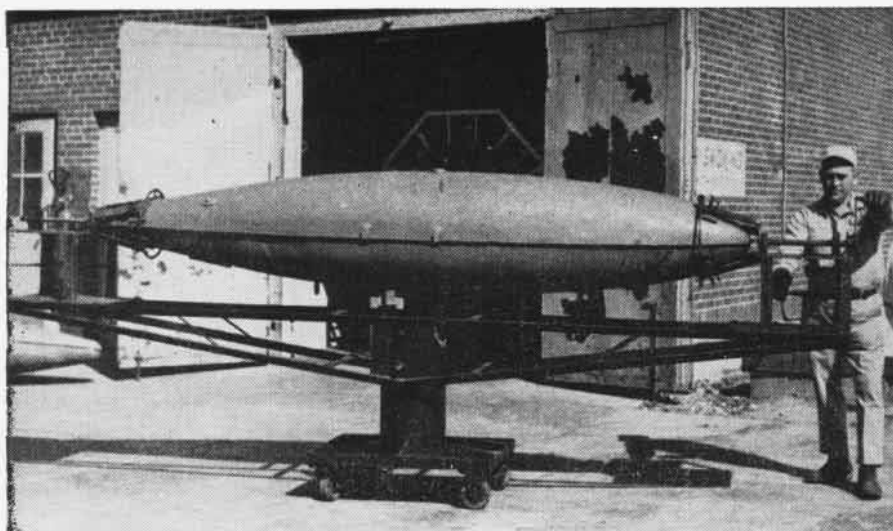
When material is received at the scrap yard, it is immediately segregated and screened. Large bins are used for storage of brass, copper, canvas, wire and scrap rubber. Items of value for local sale are kept in the warehouse.



SALVAGED ALUMINUM FROM PLANES GOES INTO 17-POUND MOLDS AT YARD



ALUMINUM INGOTS READY FOR SALE; NOTE CORSAIR WITH SIX JAP FLAGS



TANK MOUNTED IN SLOSHING CRADLE IS ROTATED BY HAND CRANK; EITHER END CAN BE RAISED

FILL 'EM UP AGAIN

EXTERNAL fuel tanks need a complicated internal shampoo job to keep them in service. At NAS NORFOLK this reconditioning work on auxiliary tanks is being done in record time. In fact, during a recent period of 12 days the A&R department put 336 tanks back into usable condition. It's fast work—has to be to keep a jump ahead of corrosion—but it's thorough.

Replacement of these used auxiliary fuel tanks with similar new ones today would be at a cost of approximately \$200 each. Moreover, since supply is critical, this efficient reconditioning project represents not only a substantial saving, but also a means of providing badly needed equipment in a hurry.

The general procedures to be used in reconditioning Mk 5 and Mk 5 Mod-1, Mod-2 auxiliary fuel tanks are pre-

sented in *BuAer Technical Note No. 10-47*. Essentially it is a process for the removal and prevention of internal corrosion—get rid of the rust in the tank and then apply permanent internal protection to prevent corrosion during storage or usage.

An initial inspection of tanks scheduled for overhaul determines which ones can be reconditioned successfully. Those found to have a heavy deposit of



CLEANED TANK GETS INTERNAL LACQUER COAT

rust are rejected. If the inspection—made through the filler opening, using drop light and mirror—shows that the corrosion is moderate, the following process gets underway:

1. The tank is grounded and then degreased and cleaned internally by sloshing a degreasing solvent within the tank. This sloshing operation is accomplished by rotating the tank, which is mounted in a turning cradle. To clean the interior of the tank adequately, three separate sloshing operations are

employed, using a different batch of solvent each time.

For economy, each batch of degreasing solvent is used for three cleaning operations before being discarded. The solvent used in the second rinse of a given tank is utilized as the first rinse of the next one; the third rinse then becomes the second, etc. The third rinse is always replaced with a fresh quantity of degreasing solvent. After each sloshing, the tank is drained.

2. The interior of the tank is sloshed with a rust remover solvent. To contact all internal areas adequately with this solvent, the tank is manipulated into several positions and allowed to remain in these positions approximately three minutes; i.e., the tail is



THREE DEGREASING SOLVENT BATHS ARE USED

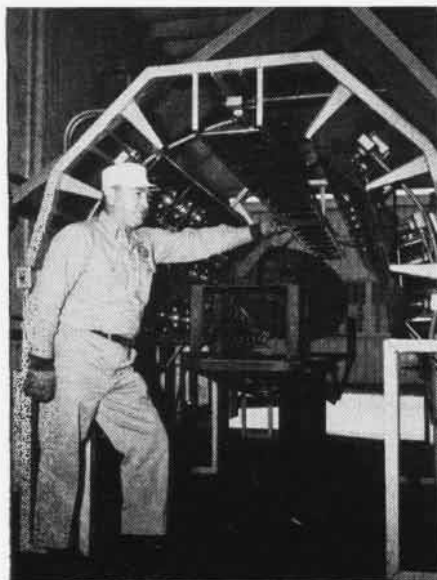
raised; the tail is lowered; leveled, etc. After a thorough sloshing in all positions, the rust remover solvent is drained from the tank.

Cold tap water then is added, sloshed, and drained from the tank. This rinse and the preceding rust removal must be accomplished within a very few minutes, since, as *T. N. 10-47* emphasizes, any delay may cause failure of the entire process because of the rapidity with which rerusting can occur.

3. A passivation treatment is applied immediately to inhibit corrosive action. This is accomplished by sloshing the tank with a solution of chromic acid and water. The solution is drained, the tank partially filled with water, sloshed again, and drained.

4. Next the tank is grounded and then partially filled with approximately 30 gallons of denatured alcohol, and sloshed. The alcohol is drained.

5. The tank is placed under infra-red lights, and, while drying, air is circulated through it for faster results.



INFRA-RED LIGHTS PROVIDE THE DRYING OVEN

6. When completely dry—this takes approximately 10 minutes—the tank is thoroughly inspected to insure that all traces of rust have been removed.

7. M-769 lacquer is added to the grounded tank and sloshed. This is accomplished by rotating the tank in different positions. The surplus lacquer is drained from the tank and the tank is air-dried for 15 minutes while being slowly rotated.

8. The tank is then placed under infra-red lamps and turned in the cradle for approximately 10 minutes. While it is still under the infra-red lights, compressed air is introduced. The tank is periodically given a quarter-turn to assure uniform heating and drying while the air is circulated through the tank. This drying process requires approximately one-half hour.

9. To increase corrosion protection, a second coat of lacquer is applied by repeating operations 7 and 8.

Obviously, the reconditioning and processing of these tanks required careful planning and coordination because of the specific requirements mandatory in each individual operation. Production methods devised by the Norfolk A&R department resulted in progressively increasing the number of units completed daily. For example, it was learned that by having an adequate number of cradles, tanks could be processed by a stage system technique. Each sloshing operation was developed as a production stage so that maximum usage of available facilities could be maintained at all times.

SOME technical difficulties had to be solved prior to undertaking the reconditioning of the auxiliary fuel tanks by the A&R department. Part of a fire-proof building had to be equipped with adequate ventilation, CO₂ fire extinguisher lines and nozzles, compressed air, water, and power lines. A drying oven, using infra-red lights, capable of producing the necessary output of heat required for quick and even drying had to be designed, manufactured and installed.

Cradles for holding the tanks during the sloshing and baking operations had to be manufactured to meet the requirements for manipulation, so that proper control of solutions, heating, and drying could be maintained within the tank. Hand operated pumps were utilized to expedite the filling and emptying of tanks. To facilitate inspection a special portable, vapor-proof electric light was developed and manufactured, assuring safe and adequate internal lighting for a difficult procedure.

Marines Check Marker Sets

VMR-152, EL TORO—Radio technicians of this squadron have made a simple device for checking marker beacon sets.

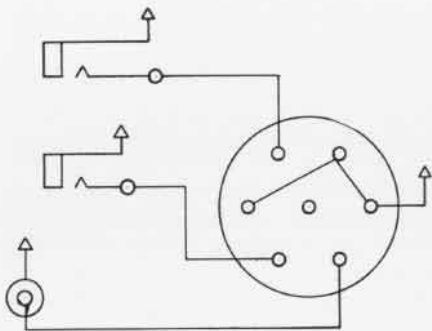


CHART SHOWS WIRING OF MARINE TEST DEVICE

A plug (P104) from the marker beacon set (R-8/ARN-8) is used as a basis for the construction. On top of the plug was placed a bracket containing two phone jacks. In the open end of the plug was fitted a lamp socket.

A cable was then connected to run 24 volts to the gear. Through head phones plugged in the jacks, the operator can listen to the set while at the same time observing the small bulb at the end of the plug. The small crystal controlled oscillator set up to provide the marker beacon signal also can be used to tune the set to 75 megacycles.

Advantages of this simple construction come from the ease in handling the set and the lesser number of wires and connections in which trouble may develop.

VMF-211—This squadron has a system for carrying 500 lb. GP bombs which it believes superior to the plan described by VF-13A (NANEWS, July), which involved welding wrought steel or strap iron plates to the Mk 5 fuel tank's sway brace pads to prevent puncturing the Mk IV drop tanks.

To carry the bombs, however, the plates must be removed or the sway braces replaced. The sway braces could be dropped and the bomb hung on the pylon, but this would necessitate using the manual release unless the Mk 1 Mod 1 release was rewired.

This squadron had to carry bombs on its North China patrols at times, so a permanent installation was undesirable. This unit glues plates to a neoprene rubber pad which in turn was glued to the Mk IV tank using neoprene rubber cement as an adhesive.

This arrangement proved satisfactory. The only difficulty lies in the fact that over a period of months the plates come loose and have to be reglued.

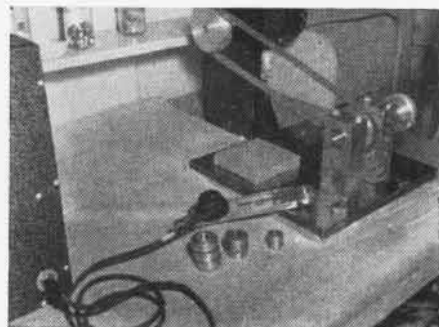
▲ **BuAer Comment**—This modification is considered satisfactory for the Mk 4 tank installation if used with the sway braces furnished with that tank, in accordance with BuAer T.O. 21-46.

Eavesdropping on Bearings

NAS CORPUS CHRISTI—A new electronic bearing tester, developed in the A&R department and approved by BuAer, will soon be in operation at this station.

The unit consists of a high-gain three-stage audio amplifier, actuating a calibrated

A. C. volt meter from a sound pick-up device that rotates the bearing under test. The amplifier is designed to have sufficient sensitivity to give a large scale reading on the output meter with the smallest and most silent bearings tested.



ELECTRONIC TESTER MEASURES BEARING NOISE

For larger and noisier bearings, resistors are switched in series with the output meter. There are five switched resistors in the circuits, giving five different degrees of sensitivity, which makes it possible to measure the noise level over an extremely wide range. A standard of tolerances can be set up for various types of bearings.

The noise pick-up device consists of a shaft and a collet chuck rotating in an oiled sleeve bearing, driven by a "V" belt from a variable motor. Mandrels are used in the collet to fit the inside diameter of various size bearings. A metal strap fits over the outer race of the bearing under test holding it stationary while the inner race is rotated by the revolving shaft and mandrel. This strap is mounted on a metal arm on which is also mounted a microphone for picking up the bearing noise. An additional accessory is a head set that can be plugged into the amplifier to hear results as well as see them registered.

The tester eliminates the trial and error procedure of bearing checks and precludes the disassembly and reassembly of a unit several times by a mechanic because of a faulty bearing.

▲ **BuAer Comment**—This appears to be a satisfactory method for checking bearings.

NATS, YOKOSUKA—Chalk up a black mark for NATS—at least in the eyes of Navy children living with their parents in Japan. School almost didn't open this fall due to non-receipt of text books. NATS obligingly flew in books so that the school bells rang on schedule.

NAS GLENVIEW—The 1,703 hours flown by Organized Reservists during February more than tripled January figures.

NAS MIAMI—During the year parachute riggers have packed more than 2,200 chutes, despite the fact that all chutes (and riggers) must be flown to NAS JACKSONVILLE to accomplish the packing since this station has no parachute loft.

VR-8, PACIFIC—It never rains but it pours. This squadron used 5,000 sheets of paper in letters, speed-letters and dispatches in a frantic effort to locate MacArthur seats a few months ago. The seats finally came and were installed. In fact, they are still coming in, far in excess of the number ordered.

AD-1 PASSES LANDING TESTS

STRUCTURAL difficulties experienced with the AD-1 *Skyraiders* during carrier landings have been eliminated, according to BUAER. The Douglas Aircraft Co., arrived at a "fix" after carrier landing tests were conducted on the *Boxer* and numerous drop tests were made at the El Segundo plant.

Adequacy of the structural improvements was proven on the *Saipan 22* to 26 March off Hampton Roads, Va. A total of 271 landings were made with six AD aircraft under varying loadings, with and without bombs. Availability of the planes was 100% throughout the tests. The AD-2 made six landings with three 1,000-pound bombs and full internal fuel.

Modification lines were established at NAS QUONSET POINT and at the Douglas Aircraft Co., plant at El Segundo, Calif., to incorporate the following structural changes:

1. Fuselage doubler plate.
2. Wing skin doubler strip adjacent to wheel well.
3. Revised main oleo metering pin.
4. Longer stroke tail wheel oleo strut and strengthened tail wheel yoke casting. This change will be incorporated in West Coast airplanes not later than next overhaul.
5. Arresting hook snubber relief valve and reduced hook trail angle.

Improvements being made in the AD-1Q and AD-2 airplanes include all of the above plus:

6. Heavier gauge wing center section nose skin.
7. Rib flange reinforcement, wing station 95.5.

The AD-1 aircraft will have one additional change incorporated at next overhaul to eliminate the very slight buckling that was observed at wing station 95.5 when repeated arrested landings were made with 2,000-pound bomb loadings swung from its racks.

Handle Life Raft Radio Gently!

THINKING of dunking your airplane in the cold Pacific or Atlantic? You may have to some day and if you want your new VHF sea rescue transmitter-receiver to work, treat it gently.

That's the word from BUAER Electronics division which is receiving RUDM's from squadrons about trouble with the unit, the AN/CRC-7, a sea-going walkie-talkie that fits in parafts.

Rough handling will cause failures in the units, VF-16-A found after putting 26 of them into service last January. Four of them showed failures on the first periodic check and blame was laid to rough handling.

Pilots should remember that they have a piece of fairly-delicate electronics gear in their parafts and not toss their chutes and rafts around like laundry bags, BUAER warns.

A total of 12,425 of the transmitter-receivers has been procured by the Navy.

ACL Describes AD Aircraft

Differences between the various versions of the AD *Skyraider* attack plane are outlined in Aviation Circular Letter 14-48, setting up model designations for them.

The AD-2 is a major modification of the original AD-1 incorporating an R-3350-26W engine in place of the -24W, fuel capacity increased from 375 to 390 gallons, improved cockpit arrangement and lighting and addition of landing gear doors.

The AD-3 differs from the AD-2, having redesigned landing gear and carry-through strength to improve landing strength, replacement of the M-20-B propeller with an M-20-A, and redesigned windshield and cock-

pit enclosure to give greater protection. Original dry cell batteries, specially-designed combination A and B batteries, did not hold their power sufficiently, so new ones were designed and are now being delivered. They will give up to 20 hours service.

The unit is tubular, measuring 15" long and 2 1/2" in diameter. It has a foot-long pull-out antenna which will give the set a range of 70 miles to a search plane 10,000 feet up. It operates on an emergency VHF rescue frequency of 140.58 megacycles and has three buttons near the built-in mouthpiece, one for tone control, one for transmitting and the third receiving.

By holding the transmit button down, the downed pilot in his life raft can give search planes an electrical beam to home on. The set is hermetically sealed and no maintenance can be done in the field outside of replacing batteries.

pit enclosure to give greater protection.

The ACL also describes the radar countermeasures (Q), the airborne early warning (W), and the night attack versions (N) of the AD aircraft. The RCM plane has modifications in the after fuselage to incorporate provisions for an RCM operator and equipment. In the AEW plane, provisions are made for two operators, radar equipment, smaller internal fuel capacity, auto pilot, and deletion of armament provisions and dive brakes. Night attack planes will have radar and RCM operators, radar equipment and bombsight, auto pilot and no dive brakes.

ACL 19-48 set up model designations of P2B-1 and P2B-1S for B-29 type aircraft assigned to naval activities, the latter ASW.

Big Camera Copies Records

NAS WHITING FIELD—The station photo lab solved the problem of copying pay records on 35 mm film without pain recently when CPHOM Oscar G. McKinnon devised a back adapter for a 4x5 view camera.

The adapter accommodates a magazine taken from an identification camera unit. It will fit all standard 4x5 camera with graflex-type backs and makes it possible to photograph 800 double frames or 1600 single frame exposures.

By compensating the range finder to focus in the magazine focal plane, practical use may be made of the unit in the field, when numerous photographs are required without reloading.



35 MM. MAGAZINE FITS INTO BACK ADAPTER

"Gunk" Good for Deck Scrub

USS CORAL SEA—The flight deck of this vessel, which is covered with cloth cleats, becomes very slippery when covered with oil from aircraft. It had been the practice to remove the oil by scrubbing the deck with a solution of lye, soap and water. The use of lye necessitated a thorough wash-down of the deck with water after the scrubbing.

Recently a solution of a commercial product called *Gunk* (a grease detergent) and fresh water has been used to scrub the deck. It is not necessary to wash down the deck after scrubbing with the *Gunk* solution, although a wash-down leaves the deck completely free of oil.

Wash downs are held to a minimum to reduce the exposure of topside surfaces to water.

▲ *BuAer Comment*—*Gunk* is a solvent emulsion cleaner, covered by specification C-147.

Marines Lead Safety Race

VMF-312, EL TORO—When comparative safety records of Air Force Pacific Fleet squadrons for the last six months of 1947 were released this squadron was rated first of the 28 units in the standings. Accidents were based on accidents reported per squadron without regard to nature, results or cause.

The squadron attributes its high safety record to: 1. Continuous stress on flight safety, 2. Outstanding maintenance work, 3. A certain amount of good luck.

By continuing its policy of periodic lectures on various phases of flight safety and by continuous observance of basic flight safety rules, this squadron is now endeavoring to maintain its high safety rating.

NAS LOS ALAMITOS—Recently Cdr. G. C. Briant, the exec, and the PIO participated in a one hour television show, produced by TXLA at the Douglas Aircraft Plant.

Tool Removes Dzus Buttons

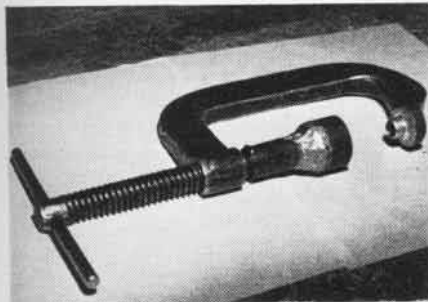
MCAS CHERRY POINT—A tool for removing dzus buttons and grommets from aircraft cowlings has been designed by an employee at MCAS CHERRY POINT, Ruby Owens, under the Navy Employees' Beneficial Suggestion Program.

The device is composed of a screw clamp with a cup attached to the clamping surface of the clamp frame and can be used on all types of aircraft with removable cowlings.

Prior to the submission of the suggestion, dzus buttons were removed from cowlings by cutting the grommet with a grommet cutter, which usually resulted in damaging the surface of the cowlings.

This tool is used by placing the cup cutter over the dzus button shank and tightening the screw until the screw cup is over the head of the dzus button. By exerting pressure and tightening the screw, the dzus button and grommet are forced from the cowlings.

Use of this tool has resulted in a saving of an average of two hours per plane. In addition, it is less awkward than a grommet cutter and prevents damage to the cowlings.



CLAMP IS ADAPTED TO REMOVE DZUS BUTTONS

ADF To Be Placed On Jets

If a plane hits a radio range station right on the "snoot" while flying 125 mph at 1000 feet, the pilot will get about a 15 second cone of silence. A jet plane traveling at a slow 375 mph would cross the same cone in 5 seconds. It has never been particularly difficult to miss the center of the cone, which would cut the 5 seconds to about the "wink of an eyelash."

So, the first time over, our jet pilot misses the cone, and with the plane's limited endurance there isn't time to try again—*touché*. On cross country flights a jet pilot hardly has time to tune in a new station and properly analyze the signal before he's out of range.

In other words conventional range and beam procedure is not satisfactory for jet plane operation. So, BuAER is procuring a number of AN/ARN-6 automatic direction finders from the Air Force for installation in all Navy jet aircraft. Those planes that are already in operation will have their present low frequency receivers replaced by the new "bird-dog" as soon as they become available. Future production models will come from the factory with the ADF equipment installed.

The AN/ARN-6 covers from 100 to 1750 kc's on four bands and gives good directional readings up to about 80% of the transmitter's range on which it is homing. The set looks like and will be operated in the same manner as the ADF installed in JRB's although the gear is somewhat more compact.



BOOKS

Battle Report, Volume IV, The End of an Empire. Capt. Walter Karig, USNR, Lt. Comdr. Russell L. Harris, USNR, and Lt. Comdr. Frank A. Manson, USN. Rhinehart & Co., Inc., 1948, \$3.50. (Beginning with MacArthur's march in the Southwest Pacific, Nimitz's great offensive across the Central Pacific, culminating with the historic Battle for Leyte Gulf, this fourth volume, prepared from official sources, tells how the war looked and felt to the men who fought on the sea, above and beneath it, and on the islands as well. Besides covering the battles dramatically, the book also gives an enlightening backdrop on the strategic planning during this important phase of the Pacific War.)

National Aviation Policies. Report of the Congressional Aviation Policy Board; Senator Owen Brewster, Chairman. Government Printing Office, 54 pp., 1948.

The Ships and Aircraft of the U. S. Fleet. Victory Edition, 8-page addenda. J. C. Fahey. Ships and Aircraft, 2033 Rhode Island Ave., N.E., Washington 18, D. C. Separate addenda—25¢; Victory Edition complete with addenda—\$1.00. (Revised aircraft designations; active carrier identification; all new models released as of April 1948.)

MAGAZINE ARTICLES

The Elephant, the Whale, and the Eagle. Cy Caldwell. *Aero Digest*, April 1948, pp. 23-25, 109, 110. (Caustic discussion of Army, Navy, Air Force functions in the event of trouble with Russia.)

Jets in England. Lt. Myron Eddy, USN (Ret). *Aero Digest*, April 1948, pp. 26-29, 104-106, illus. The Air Force Flies the Weather. Nathaniel F. Silsbee and Ralph W. Brown. *Aero Digest*, April 1948, pp. 37, 38, 80, 81, illus.

They Call It "Tricon." *Aero Digest*, April 1948, pp. 42-45, 98-102, illus. (G.E.'s "Triple Coincidence" electronic method of air navigation developed by Dr. Luis W. Alvarez.)

Flight Thrust Analysis. Part I. Albert W. Gabriel, Jr. *Aero Digest*, April 1948, pp. 60-66, 106. (New method of determining turbojet engine thrust in flight is superseding earlier, more cumbersome methods.)

Congress Forcing Air Fund Boost. *Aviation Week*, March 29, 1948, pp. 7, 8.

NACA Engine Research Plots New Boosts for Jet Power. Robert McLaren. *Aviation Week*, March 29, 1948, pp. 9, 10.

Rotor Blade Spoilers Aid Control. Scholer Bangs. *Aviation Week*, March 29, 1948, pp. 24, 25.

Cockpit Confusion . . . A Challenge. Lt. Comdr. George W. Hoover, USN. *Aviation Week*, March 29, 1948, pp. 18, 21, 22.

Expected World War II Pilot Surplus Used Up. Balfour Says. Alexander McSurely. *Aviation Week*, March 29, 1948, pp. 29, 30.

Navy Reveals New Air Program. *Aviation Week*, April 5, 1948, p. 13.

Air Force B-29's Bomb Muroe on 4600 Mile Mission from Tampa. Robert Hotz. *Aviation Week*, April 12, 1948, pp. 11, 12.

Congress Still Battling Truman Administration over Airpower. *Aviation Week*, April 12, 1948, p. 14.

Dangers Taken Out of Ditching by Special Flap and Foil Devices. Robert McLaren. *Aviation Week*, April 12, 1948, pp. 19, 20.

The Betrayal of Air Power, II. Robert H. Wood. *Aviation Week*, April 12, 1948, p. 54.

Russian Jet Fighters Operational. Frederick R.

Brewster. *Aviation Week*, April 19, 1948, p. 15. Landing Impact Vibration Studied. *Aviation Week*, April 26, 1948, pp. 26, 27.

Does the Army Want the Reserves? Donald Robinson. *Collier's*, April 10, 1948, pp. 24, 25, 68, 73.

The Navy's New Training Plan. James M. Stacy, Lt., USN. *Flying*, May 1948, pp. 16, 17, 79-81.

Our Unusual Airports. Joseph Barry. *Flying*, May 1948, pp. 20, 21, 77, 78, illus.

Grumman Panther. Jerry Leichter. *Skyways*, May 1948, pp. 28-30, 53, 55, 57, illus.

Why We Need Naval Air Power. Senator Chan Gurney. *Skyways*, May 1948, pp. 32, 33, 56, illus.

Planes and Plans for the Air Navy. Rear Adm. T. C. Lonnquest, USN. *Skyways*, May 1948, pp. 34, 36, 52, 54, illus.

U. S. Navy Planes. *Skyways*, May 1948, pp. 37-43, illus.

Guided Missiles. Adm. D. V. Gallery. *Skyways*, May 1948, p. 44.

Marine Aviation. Gen. Field Harris. *Skyways*, May 1948, p. 45.

Solve F8F Light Problem

VF-12-A, PACIFIC—From the experience gained by qualifying 13 pilots in F8F's aboard the *Valley Forge* at night, this squadron has developed a system of cutting down cockpit light glare.

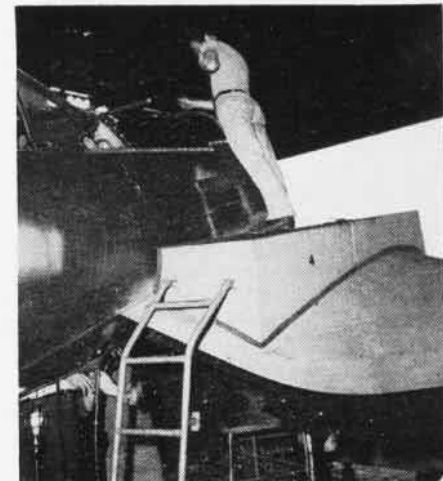
By blacking out the forward half of the turtle-back white light, a large amount of the glare reflected in the canopy and windshield was eliminated. This may have contributed to the fact that all landings aboard the carrier at night were made with few wave-offs and no accidents.

No-Slide Platform On F4U

MCAS CHERRY POINT—A wooden platform constructed to fit curvature of the F4U wing, providing space for the worker to sit or stand safely while working on it and other aircraft, has been developed by John C. Sinclair under the Navy beneficial suggestion program.

The platform is in two sections, placed in position on the wing so that it fits into the retarding foothold on the trailing edge of the wing. A hook fastens it on the leading edge and attaches to a platform attachment point, a square hole cut in the side of the plane just over the wing.

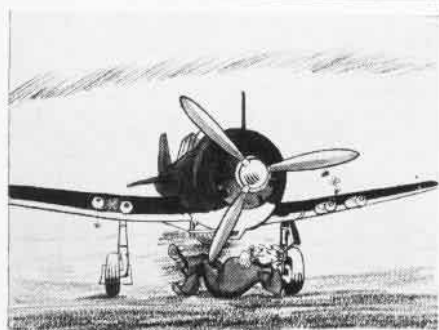
In addition to eliminating danger of the worker slipping while standing on the sloping wing, it is estimated two manhours a plane are saved by giving him better footing.



GULL-WING OF F4U NO MORE THROWS WORKER

AVIATION ORDNANCE

INQUIRIES SHOULD BE ADDRESSED TO THE CHIEF OF BUREAU OF ORDNANCE



LET IT RAIN—I'M TIRED

Machine Gun Preservation

The A&R Dept., Marine Corps Air Station, Cherry Point, N. C., reported guns on F4U and F7F aircraft received for overhaul were in most cases badly corroded due to improper and inadequate preservation.

Apparently the maintenance man, like the sleeping beauty in the above cartoon, thought it unimportant to take care of the guns installed in the planes. However, aircraft machine guns, like any other piece of intricate machinery, when idle and not properly maintained will rust and corrode to such an extent that subsequent use or overhaul is impossible. The scrap value of such guns cannot possibly pay for the cost of shipment to overhaul points. Therefore, if ordinary precautions are followed in the preparation of equipment for periods of idleness, storage, or shipment, a considerable savings in material as well as overhaul cost can be effected.

PROPER MAINTENANCE: In preparing guns and accessories for extended periods of idleness, the following considerations must be given: 1. Proper and careful cleaning of equipment. 2. Selection of the appropriate preservative. 3. Proper application of the preservative. 4. Packaging of equipment after application of the preservative.

Regardless of the effectiveness of the preservative corrosion is likely to occur if moisture and dirt are not completely removed prior to the application of the preservative. Likewise, improper selection of the preserving material may result in inadequate protection, permitting corrosion and rusting.

Lubrication and preservative oils offer some degree of protection but are not entirely satisfactory for extended periods of idleness unless frequent inspection and reapplication of the preservative can be accomplished. For that reason, the hard film preservatives are recommended if frequent inspection is impractical, and this material is intended for corrosion prevention under the most severe conditions of exposure.

▲ **BuOrd Comment:** All maintenance personnel shall become familiar with the Ordnance section of Bureau of Aeronautics publication NavAer 00-85A-501, Army publication TM9-229, and BuOrd OP 1317. Detailed instructions for preservation and maintenance of Aviation Ordnance Equipment can be found in these publications.

Carriers Get New 20mm Link

Link, 20 mm, M8, for use in the 20 mm M3 aircraft gun, has been released for issue to all active aircraft carriers of the Atlantic and Pacific Fleets. The new link replaces the M7 link and will be available in sufficient quantities for issue to all aviation activities by 1 January 1949.

The link M8 is similar in appearance to the link M7, in that it has the same Parkolubricized finish and distinguishing protruding "dog-ears." It differs from the link M7 only in that (1) it has wider and stronger ears which eliminate some stoppages which were due to broken or missing "ears;" (2) it has slightly longer single and double loops; and (3) the ends of the double loops are cut on an angle.

Navy tests indicate that these longer loops solve the problem of belt-separations which were experienced while using the link M7 and, in addition, lessen the tendency of the cartridges to "walk out" of links during handling and shipment of ammunition belts. The angular cut of the ends of the double loops serves as a means of identification. Links M8 are packed 500 in one double-wax-dipped carton which in turn is packed in a nailed wooden box. End links are not included in this packing since the feed mechanism AN-M2(T14) does not require any.

When belting ammunition with links M7 or M8, the distance between the base of the cartridge case and the edge of the double loop nearest the base should be 2-9/32" plus or minus 1/16". When loading ammunition belted in either of these links into the feed mechanisms AN-M2(T14), insert the belt into the belt-guide with the single loop of the links leading. The last double loop in the belt should contain a round of ammunition. As ammunition belted with these links is fed through the feed mechanism AN-M2(T14), the ears of each link are caught on two cams in the feed mechanism which strip the link off the cartridge and guide the empty link into the link ejection chute.

Identification of links required for specific feed mechanisms:

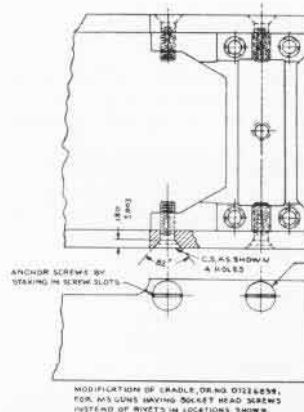
For convenience, the 20 mm aircraft automatic guns, the feed mechanisms with which each is equipped, and the specific disintegrating belt link(s) which MUST be used with each mechanism are indicated below:

Gun	Feed Mechanism	Links
AN-M2	AN-M1A1	M3A1
M3(T31)	AN-M2(T14)	M7 or M8(M7E4)

As rapidly as production permits, the "Gun, Automatic, 20-mm, Aircraft, AN-M2" with "Feed Mechanism AN-M1A1" is being replaced by the lighter, shorter, and more satisfactory "Gun, Automatic, 20-mm, Aircraft, M3(T31)" with "Feed Mechanism AN-M2(T14)". However, link requirements are specific for each feed mechanism since the Link M3A1 can NOT be used interchangeably with the links M7 and M8(M7E4). Therefore, when requesting ammunition and

links, it shall be the responsibility of the activity to furnish the source of supply specific information as to the type of link required. If both links M3A1 and links M7 or M8(M7E4) are required, the quantity of each type shall be specified.

▲ **BuOrd Comment:** It is believed that the new M8 link will eliminate many of the stoppages that were encountered when using the M7 link. For further information consult BuOrd NAVORD OCL AV28-45.



Cradle Change, 20mm. Gun

Mounting bracket (B7226810), a component part of the cradle assembly (D7226840), was attached to the aluminum cradle body (D7226839) of early production 20 mm. M3 guns by means of four socket head screws and a flat head machine screw. Figures 16 and 22, OP 1317 illustrate this arrangement. On later production guns, the mounting bracket was riveted to the cradle body with flush head rivets.

In certain aircraft turret installations, the protruding socket head screws (A7226781) of the cradle assembly interfere with the cradle mount. This condition precludes the use of these early production guns in such installations. To insure complete interchangeability of guns, BuOrd will shortly issue an OMI-V for the modification of all guns employing socket head screws to attach the mounting bracket to the cradle body.

The modification will consist of (1) removing the four socket head screws; (2) counter-sinking the four holes in the cradle body to a depth of 0.180 ± 0.003 inch; (3) installing four 5/16-18 Flat Head Machine Screws (AN 505C-516-16); and (4) anchoring the screws by staking. The accompanying sketch illustrates the details for performing this modification. The screws for this modification will be furnished by BuOrd.

Fire Control Maintenance

Until service experience indicates otherwise, it is considered that under normal conditions, line maintenance of the aircraft fire control system Mk 6 Mod 0 as installed in the F4U-5 and F8F-2 aircraft will consist of cleaning lenses, checking pip alignment, changing lamp bulbs, and testing for excessive friction in the gyro unit.

To aid in maintaining this equipment a line maintenance set, stock number J942-S-4321, is being distributed for Fleet use. It contains bits and pieces required for minor repairs to

the sight unit and other components. Spare reflector plates, connector plugs, knobs, gaskets, gel cells, silica gel, lens tissue and attaching screws are included in the set. The spare parts sets will be allowed one per squadron and they may be requisitioned in accordance with the procedure established in BUORD NAVORD OCL V2-47.

Any system component in inoperative condition that requires parts not contained in the set should be turned in and a new component drawn from supply. An allowance of one each spare sight units Mk 8 Mod 0, control boxes Mk 20 Mod 0, and relay boxes Mk 7 Mod 0, along with other BUORD furnished items is available to squadrons operating aircraft equipped with aircraft fire control system Mk 6.

THE HOWLER

Rotor Maintenance. Sikorsky Aircraft Service Information Circular No. 46, 23 March 1948, gives the following information on checking torque of S-510222 main rotor thrust nut on the HO2S-1 and HO3S-1:

"Whenever the S-510222 main rotor thrust nut is removed and re-installed for any reason, it should be tightened and checked as follows:

"1. When it is installed, it should be tightened to 100-200 ft. lbs. torque with the S-10-50-4006 special wrench and a 1/2" drive torque wrench.

"2. After 2 to 5 flying hours the torque should be checked. The wide range of torque should permit using new tangs of the lockwasher. The tangs previously used to lock the nut *should not be used again.*

"This information should be added to the applicable manuals and inspection forms, and the torque value of 90-100 ft. lbs. for the S-510222 nut should be changed to 100-200 ft. lbs."

Corsair Seal Problem. A recent RUDM stated that the neoprene seal at the take-off door, induction system, of an F4U-4 was found to be missing and was discovered on top of the carburetor air screen.

The contractor, in commenting on this report, states that the VS-43851 screen assembly consists of a frame to which is cemented the neoprene-edged VS-46669 screen which serves as both a screen and a seal. The cement used is oil and fuel resistant and has proved very satisfactory in securing the seal. There have been a few reports in the past three years of the screens being loose, but this is the first report of a screen becoming entirely detached.

Because of the excellent service record of the take-off door screen (seal), the contractor considers the method of attachment to be satisfactory.

Recommendation: These screens should be inspected during overhaul. Any found to be loose should be cleaned and re-cemented.

NAS QUONSET POINT—A new organization of aviators has been formed—the *Phantom Jockeys*—composed of naval fliers who pilot the F4U-1. Twenty-four were initiated into the group recently at a supper given for VE-17-A by McDonnell Aircraft Corp., maker of the planes. Membership is limited to 75.



SUPPLY NEWS

FROM ASO AND SUPPLY DIVISION BUAER

Accountability Lists Set Up

The Joint Aviation Supply—A&R Conference held at ASO last October approved a property accountability system for assigning plant accounting, equipage, and exchange accountability classifications for all items of aeronautical material and equipment. This approved property accountability system was submitted to BUAER for possible adoption for all aeronautical material. It was subsequently approved by BUAER for promulgation to the field by ASO.

ASO will shortly promulgate the accountability classifications in the *Classification Index of Aeronautical Material, Spare Parts, and Equipment*, which will be the official list for the accountability classifications. It is planned to have property accountability classification included in all BUAER Allowance Lists. A brief description of the property accountability classifications follows:

1. "A" will signify items requiring continued property accountability and custody while in use. Formal survey will be required when lost or missing. Examples of such items to be included in the "A" category will be aerological equipment, photographic, shop tools, machinery, and certain electronics test equipment.

2. "X" will signify those items which are exchangeable, because they are normally repairable. Items will include those listed in the Salvage Lists, etc.

3. "C" will signify items that are consumable or expendable. Examples of such items are bolts, nuts, washers, and gaskets.

4. "AX" will signify items that are accountable and exchangeable but will be limited to flight clothing items only, for the time being.

It is planned to incorporate complete instructions on property accountability classifications in the *BuSanda Manual*. These instructions will be regarded as the official source of information. Working instructions will also be included in the foreword to the *Classification Index of Aeronautical Material, Spare Parts, and Equipment* which will be issued in the revised form on or about 1 July 1948.

Reprovisioning AM-1 Spares

The Navy spares provisioning team convened at the Aviation Supply Office and at the contractor's plant for the reprovisioning of spare parts for AM-1 airplanes.

All items that were source coded "P" or "P1" were reviewed. Items previously cancelled but later source coded "M" or "M1" were placed in a "D" list and not increased in quantity on the second 50 plane contract based on the procurement of 99 aircraft. Ten "B" lists (maintenance spares), five "C" lists (overhaul spares), and one "D" list were established.

Items from these lists were scheduled for shipment to NAS NORFOLK ("S" Activity)

and NASD NORFOLK ("D" Activity). No AM-1 spares have been designated to NAS SAN DIEGO ("S" Activity), since the latest planning information indicates that all AM-1 aircraft will be operating on the East Coast.

All armament items were reviewed, as many of these items had not previously been considered. The quantities of armament items were established, and they are placed on the "D" list for allocation to NASD NORFOLK. The prime contractor was requested to submit breakdown drawings of the dive brake fingers, in order that A&R activities may repair or replace fingers if damaged.

Tools and ground handling equipment items have been fully considered for the 99 aircraft now under contract NOA(S)-5400 and to increase the present quantity on order 50% for the additional 50 aircraft under contract NOA(S)-8523.

Reserve Supply Conference

The second annual conference of the Supply Officers of the Reserve Training Command Air Stations was held at ASO recently. This conference was convened primarily to review the problems of the Supply departments of Reserve air stations and to review new developments in aviation supply.

Major presentations followed by discussion periods were given on the following subjects: comments on BUAER Supply and Maintenance Divisions; organization of supply departments; maintenance allotments at Reserve naval air stations and cost of station maintenance and operation; personnel conditions—military and civilian; inventory procedures—scheduling reports; disposal of surplus material; the QSSR system; relation Reserve naval air stations in GSSO system; clarification of budgetary accounting; BUAER connections with the Reserve Command; preparation and submission of BR forms; storage space control; shop store operations; electronics; automotive spare parts; clothing and small spares.

The last day of the conference was devoted to open discussion of problems encountered by the Supply Officers of the Naval Air Reserve Stations.

It was agreed by conferees, ASO and BUAER representatives that excellent results were obtained from this conference and that similar meetings should be held.

Correction on Salvage Item

The last sentence of the article on "Salvage of Usable Spares" in the March *Supply News* contained an error. The sentence should read: "For non-combat type aircraft, see ASO Circular Letter No. 166 (Revision #3) dated 31 October 1947, for a detailed parts list."

NATS, OKINAWA—This western Pacific detachment read Moffett Field tower five by five on voice recently so gave them a call and got a five by five from them too. Had to tell them twice that it was Naha, Okinawa, though, and still wonder if they believed it.

SERVICE TEST

INTERIM REPORT DIGEST

This digest covers the 15 April Interim Report of Service Test, NATO PATUXENT and does not necessarily reflect BUAER policy.

FJ-1 (69 Hours)

Twenty-four hour flights with tip tanks installed have been made. Majority of flights included altitudes of 30,000—46,000 ft. Engine operated satisfactorily on grade 115/145 gasoline throughout flights.

Cock Assembly Drain. After 12.2 hours, water and sediment cock assembly drain, P/N W7600-1/8B of fuel filter, P/N 134-48045, developed a leak. Leak occurred after pre-flight servicing, apparently caused by loss of tension in movable flat spring which provided the pressure against the "O" ring back-up seal. *Recommend* that contractor provide a fuel filter sump drain valve that possesses more durable qualities.

Antenna Cable. Coaxial cable from broad band antenna to high-low pass filters is routed and clamped along the inboard edge of the ribs in the engine compartment. Inspection of cable after three removals and installations of the engine showed the following damage: outer waterproofing material was ruptured in two places in vicinity of frame 160 $\frac{3}{4}$, and cable clamp at frame 193 $\frac{1}{2}$ was broken and the cable hanging loose. *Recommend* that cable be rerouted through the ribs in engine compartment to comply with AN-W-14a para. C-3c(1).

Pump Mounting Bracket. The four bolts that attach the mounting bracket of emergency fuel system pump to the bulkhead are relatively inaccessible. Excessive time is required for installation or removal. A socket wrench cannot be used and an open end wrench used only with difficulty because the weld build up around the outer circumference of the lightening hole interferes with required wrench action. *Recommend* that size of the lightening hole be decreased sufficiently to permit location of bolt holes a greater distance from the weld build up.

Strut Assembly. Auxiliary landing gear shock strut assembly, P/N 141-34102, and damper assembly, P/N A10639, failed on 33rd landing. Violent shimmying occurred on landing run immediately after auxiliary wheel contacted runway. *Recommend* that contractor analyze failure and take action to provide durable and reliable strut assembly.

Attitude Gyro Indicator. After 13 hours the attitude gyro indicator, P/N R-88-1-1305, failed. Continuity check of the instrument indicated that the "A" phase was open.

J-35-A-5 Engine. After 46 test hours, including 55 normal starts, 5 hot starts, and 1 hot acceleration, turbo-jet engine NO. 500092 was removed for inspection. The following discrepancies were revealed by investigation:

1. Inner combustion chamber—The majority of the securing lugs at the down stream end had parted at the weld; seven of the chambers were cracked and distorted from their original shape.

2. Turbine nozzle—The turbine nozzle blades showed no circumferential breaks; however, numerous radial cracks and considerable distortion and ballooning from original contours were found.

3. After frame—Rust formation was apparent in several places.

4. Transition liners—Several liners were distorted from their original contours.

Brake Lining. After 30 hours aircraft time and approximately 64 take-off, landing and taxi miles, all brake linings required replacement because of excessive wear. *Recommend* that contractor improve quality of brake lining.

Hydraulic System. The wing flap, dive brake, and landing gear selector valve and related hydraulic lines are mounted above the upper edge of the left gun bay compartment between frames 70 and 78. Excessive time is required for removal, installation, or adjustment.

Oil Tank. Engine oil tank and suspension cradle is attached to right side of fuselage near station 142 $\frac{1}{2}$. Location of tank and related lines adds to inaccessibility of oil and hydraulic equipment on right forward side of engine compartment. Relocation of oil tank would permit rerouting of hydraulic lines, facilitate maintenance and increase space available for engine removal and installation. *Recommend* that contractor investigate possibility of redesigning and relocating oil tank and that area above midframe or after section of engine compressor be considered as a relocation point.

Cam Assembly. Supporting and adjusting methods for the auxiliary landing gear cam assembly, P/N 14134150, located between and mounted on aircraft skin formers (.064 al. alloy 24ST) at stations 39 $\frac{3}{8}$ and 49 $\frac{1}{2}$ are unsatisfactory as described below:

1. After approximately 200 landing gear cycles the holes in the aircraft formers, through which the upper support shaft extends, became elongated, allowing excessive vertical movement of the cam assembly.

2. Auxiliary landing gear wheel rotating cam support block, P/N 134-34161, that receives the upper shaft showed no excessive wear. However, the diameter of the longitudinally drilled passage in the block was 1/32" larger than the outside diameter of the upper support shaft, permitting further vertical movement of this entire assembly.

3. Fore and aft or angular adjustments to auxiliary landing gear cam assembly are made by in-

serting washer shims between aircraft skin formers and the center and lower supports.

4. Cam assembly must be removed to make the adjustments of 3 above.

Remedial action taken: Aircraft skin formers were reinforced with .064 24ST. Bushings were manufactured locally to correct item 1 above. *Recommend* that contractor provide a sturdier mount and redesign assembly to incorporate better methods for quick adjustments of auxiliary landing gear assembly.

Catapult Mechanism. The catapult hook is retracted by a cable assembly connected to the nose wheel retracting linkage. This cable assembly was improperly adjusted, causing the arm assembly, P/N 134-56126, to contact the arm assembly stop before the nose wheel was fully retracted. As the nose wheel continued to retract the arm assembly stop sheared.

Fuel Booster Pump. After 31.8 hours the fuel booster pump failed. Investigation showed that pump and bearing retainer had broken in several parts and broken parts had jammed between the bolts and the bearing races. Fuel seals were found to be in good condition and no fuel leakage was apparent.

Generator Brushes. Starter generator brushes were found badly worn after 8.5 hours test time. Of this time the unit had been operated 3.2 hours at altitude of 35,000 ft. or above.

Mk 23 Gunsight Mount. After landing during which shimmy damper failed and aircraft was subject to severe vibration, following discrepancies were noted:

1. Adjustable mounting platform parted at welded area around pivot tube.

2. The differential toothed mounting bracket failed at rear sight mounting bolt.

3. Lower right attaching nut of the sight mount was torn through the fuselage supporting bracket.

4. Tears of about one inch long appeared in fuselage skin at forward corner of sight mount attachment.

Recommend that contractor improve gunsight mount to prevent such a failure.

F4U-5 (48 Hours)

Exhaust Collector Support. The support installation rod assembly, VS-57903, failed at the base of the threaded shaft. Failed shaft was 1/4" in diameter. Broken rod assemblies were replaced with new rod assemblies furnished by Chance Vought and having a threaded shaft of 3/8" diameter.

Cowl Flap Support. The channel assembly braces, VS-56564 and VS-56565, of the engine cowl flap support were found broken at 34.2 hours. Lower half of cowl flap support assembly was replaced with contractor furnished channel assembly which included braces made of .051" material.

AM-1 (84 Hours)

Cowl Ring Bolts. The special hardened nose cowl ring attachment bolts supplied by the contractor were inspected after 30 hours operation with the following results: Rows 1, 5, 6 and 7 had a groove averaging 1/4" long cut to a depth of .010"; rows 3 and 4 were not marked; row 2 had a small scratch; none of the bolts had rotated since installation.

Exhaust System. During installation of test exhaust system, P/N 10-5000008, the following defects needing remedial action were noted:

1. Clamp attaching the forward leg of exhaust thrust stabilizer support to the mount rod is too large. An .080" circular shim had to be installed before clamp could be tightened on the engine mount rod.

2. The "C" row exhaust stack clamps loosen, even when torqued to the proper value, and rotate to a position where the stack clamp bolts chafe against the adjacent exhaust stack. As remedial action, each of the clamps was safety wired to an adjacent cylinder ear to prevent further rotation and chafing.

3. Exhaust stack clamp, P/N 10-5000207, cannot be rotated for removal or installation because the square blocks provided for attaching the clamp straps are placed too close together and will not clear the cylinder ear. To replace this clamp or any part of the exhaust system for bank 1, it is necessary to remove the complete exhaust system for bank 1.

4. The figure eight clamp, P/N 10-5000209, located at the bank 1 exhaust stack slip joint is too small and cannot be secured without disconnecting one of the exhaust pipes from the cylinder exhaust ports.

5. Torque specified for the figure eight clamps was reached before the clamps had uniform bearing surface. This requires individual forming of each clamp.

6. The thrust arm was too long to permit adjustment. As a remedial action, it was shortened by removing $\frac{1}{8}$ " from the threaded end.

Exhaust Header. After 30.7 hours the exhaust header, cylinder C7, test exhaust system, P/N 10-5000008, broke adjacent to the weld.

Propeller Spinner Fairing. Lower left attachment ear for the forward half of the fixed propeller fairing was found broken after 34.9 hours. The four fairing attachment ears are separated from engine nose section by spacers of two different thicknesses. The two upper ear spacers are thinner than the lower. One thin spacer was found under the broken attachment ear and is believed responsible for the failure.

Installation details are not contained in the E&M Manual, AN 01-35EF-2. *Recommend* that contractor flush rivet the spacers to the proper positions on the propeller spinner fixed fairing to prevent their being misplaced during installation of fairing, and that E&M Manual be revised to include necessary details for installation of the fixed propeller fairing.

Pacitor Tank Unit. After 169 hours, fuel quantity indication for the left wing cell, Pacitor fuel contents tank unit, P/N 37-6-2100-19, became erratic. Examination revealed the following:

1. Plain nut securing the electrical terminal to the inner tube had loosened and backed off.

2. Star lock washer dropped unnoticed between the concentric tubes when the coaxial cable was being removed.

3. Unit was reassembled but failed to test properly. Removal of the end caps from the tank unit disclosed the star lock washer to be lodged between the concentric tubes.

Absence of a parts assembly illustration for the tank unit in handbook of operating and service instructions NAVAER 05-75-544, complicated servicing and reassembly of the tank.

The wing cell units of Pacitor fuel contents installation are highly inaccessible as access must be gained through the fuselage bomb station. Total time to remove the left wing cell tank unit was two men, 3 hours, 58 minutes; total time to install was two men, 6 hours, 38 minutes; total removal and installation time—two men, 10 hours, 36 minutes.

Recommend: 1. That the plain nut and lock washer used to secure the electrical terminal to the inner tube be replaced with a self-locking nut and plain washer; 2. that the handbook of operating and service instructions be revised to illustrate the location of subassembly parts; 3. that the contractor improve the accessibility for maintenance of the Pacitor fuel contents tanks units installed in the wing cells.

Pilot's Canopy. Installation of the pilot's canopy is complicated by restricted access to the bolts and nuts attaching the canopy arch to the aft trolley. With the aft trolley in the most advantageous position, the nuts are at arms length and two hands are required to position washers and start the nuts on the bolts. *Recommend* that the self-locking steel nuts, AN365-524, for the bolts attaching the arch to the aft trolley be replaced with plate nuts AN366F524.

Bomb Racks. After five 500-lb. bombs had been dropped from the left bomb rack, the bomb rack adjustment mechanism failed to raise or lower the rack. Investigation showed the bronze gear worm, P/N 10-2080350, to be installed upside down, permitting only $\frac{1}{16}$ " of the teeth to mesh with the worm adjustment gear, P/N 10-2080364. Damaged worm gear teeth were dressed and gear was installed properly. *Recommend* that all aircraft be inspected during next regular check for this discrepancy.

Grounding Jacks. The wing tank grounding jacks provided for the fuel hose ground wire are located inside the fuel filler doors and are attached to the scupper walls. The grounding jacks are not readily accessible because of the small door size and location of the jack in the scupper. *Recommend* that jacks be located on the skin adjacent to the wing tank fuel filler doors.

Bottle Assembly. (Tail wheel emergency air, P/N 10-8066007-10) Pin securing the spool to the spool shaft was found backed out one third of its length because the snap ring used to secure the spool pin in place had rotated and uncovered one end of the pin. With the spool pin removed, emergency extension of the gear is impossible. Screws that secure the cable to the spool were loose. Snap ring was removed and closed slightly, then reinstalled with the gap positioned 90° from the ends of the spool pin. *Recommend* that contractor provide a dependable air release mechanism for landing gear emergency air bottle.

Center Bomb Rack. After eight 500-lb. bombs had been dropped from center bomb rack, bomb rack adjusting mechanism was found jammed. Pin securing the driven bevel gear to the shaft, P/N 10-2080546, had backed half way out and jammed against the gear box cover. Pin was reinstalled and staked in place. *Recommend* that contractor stake the securing pin in place in the bevel gear.

Rudder Interference. After 168 hours, the fuselage rib station 474 was found chafing

the rudder. These ribs were found to be very flexible and easily deflected by the pressure required to secure the access door fasteners.

As temporary fix the ribs were separated by means of a spreader to provide clearance for the leading edge of the rudder. The spreader was manufactured from a length of $\frac{3}{8}$ " chromolledium tubing and a plate welded to each end. The plates were used to bolt the spreader in place on the fuselage rib. *Recommend* that contractor modify fuselage rib station 474 to prevent it from jamming the rudder.

Aileron Hinge. Removal and installation of ailerons is complicated by restricted access to the hinge bolts. As remedial action the outboard aileron hinge bolt access door was enlarged to $\frac{7}{8}$ " x 4". *Recommend* that contractor comply with paragraph 227 of SD-24-E.

FH-1 (145 Hours)

Forced Landing. BUNo. 111754 was involved in a forced landing. Aircraft is considered a strike; however, engines NOS. P-400005 and P-400008 suffered no apparent damage. FH-1 BUNo. 111755 was assigned for continuation of tests. Both engines from BUNo. 111754 have been given 50 hour check, and engine P-400005 has been installed in BUNo. 111755. Engine P-400008 with 109 hours will be installed in the other nacelle.

Speed Brake Screw Jack. At 120 hours the three $\frac{1}{8}$ " rivets and the grease fitting sheared off, permitting the grease housing to become separated from the jack screw body. Close adjustment had permitted the stop to strike the collar on the screw jack brg. housing and break off. As result of failure of this stop, the end of the screw jack repeatedly struck the pin used to secure the threaded end fitting to the housing. The stop pin was found bent as a result of striking against the collar on the other end of the bearing housing. *Recommend* that screw jack be modified.

Aircraft Finish. Paint cracks and peels off, particularly on surfaces which oilcan slightly in flight. *Recommend* that contractor investigate and provide a more durable paint.

VR-3, PATUXENT RIVER—During the past winter's cold spell, the Patuxent River froze over so that water taxis could not make the five-mile trip across to the air station from Solomons. Several VR-3 officers had to drive their cars 105 miles around the river to get to work and back.

Marines Use Fast F4U Dive

VMF-223, EL TORO—This squadron has worked out a successful high speed approach for dive bombing, with the idea of getting to the target as quickly as possible and still making a steep, accurate run.

The high speed approach is started at 20 to 30 miles from the target, utilizing a moderate power let-down from high altitude to maintain 250 to 300 knots indicated air speed. At about a mile from the target with an altitude of 10,000 and 280 to 300 knots air speed, the landing gear is lowered.

By the time 8,000 feet is reached, the aircraft is retrimmed. At 8,000 feet the final dive of 50° to 60° is made. A maximum speed of 340 knots is attained in the dive as contrasted with 400 knots plus which would result from a wheels-up dive from the same high speed approach.

LETTERS

SIRS:

The article entitled "Marines Get Aboard Carrier (January 1948 issue), as well as the letter signed "Naval Aviator" (April 1948 issue), was especially interesting. I agree with "Naval Aviator" that the skipper of the ship, the Air Dept., and the L.S.O. as well as the participating Marine pilots all deserve recognition for their fine performance, when the comparatively heavy monoplanes now in use are considered.

It is unfortunate that such records are not compiled for ready reference, but had they been, both the *Siboney* Marines and VS-41 would find themselves still "runners-up." Neither appear to have topped the record of the original *Lex* made during the 1939 war games in the Caribbean.

With VF-3, VS-3, VB-2, and VT-2 forming her Air Group, the *Lex* landed all her planes (at least 72 and perhaps 74) in twenty-eight and a fraction minutes without wave-off. It was believed at the time that this was an all-time record for any carrier. As part of this landing operation VS-3 landed 18 SBC-3's with an average interval between planes of 19.7 seconds.

"Dutch" Greber (now Captain) then commanded VS-3, with the late Lt. Cdr. John Waldron of Torpedo Eight fame as Exec. Among the squadron pilots were George Dufec and Howard Caldwell (both now Captains) who figured prominently in the Navy's recent Antarctic Expedition.

NAVAL RESERVE AVIATOR

ARLINGTON, VA.

SIRS:

In the *Letters* column of the March issue it was noted that activities are claiming records for landing intervals aboard carriers. Undoubtedly you have had many claims to records; however the old VS-2-B of the early 30's established a record on the *Saratoga*, with, as I remember, 12 planes of the SU type using the first self-releasing tail hooks in the Navy.

Unfortunately I do not have access to the records to give the exact time, but if my memory serves me right it was under 20 seconds and in the neighborhood of 15 seconds per plane.

Captain Cliff Duerfeldt, then Lt. (jg), was signal officer and assisted the VS-2-B to accomplish this record by laying the aftermost three wires down in order to expedite taxi-out time on the carrier.

Incidentally, of all the improvements for landing signal officers that have been established over the years, the first, and one of the most valuable, was invented by Captain Duerfeldt. This was the wind screen for the signal officer and it is still being used.

N. F. GARTON, CAPT.

BUAER REPRESENTATIVE

MCDONNELL AIRCRAFT CORP.

ST. LOUIS, MO.

SIRS:

Upon reading of NATS fine record of delivering cholera serum to Cairo within 24 hours after the distress call from the Egyptian government, we thought it might be of interest to note a similar flight by an aircraft of this squadron for the same purpose.

On the evening of 28 September 1947, a dispatch was received by Commander Fleet Air Detachments Eastern Atlantic and Mediterranean requesting delivery of cholera serum to Navy tankers at Dhaharan, Saudi Arabia, no later than 30 September. The vaccine was necessary as the ships would be quarantined and not allowed to deliver fuel to the Mediterranean fleet.

At 1145Z 29 September, Lt. Cdr. Eric W. Polard in a *Privateer* of VP-HL-6 detachment took off from Port Lyautey, French Morocco for London. At 1800Z he landed there and upon receiving the cholera serum took off for Athens. At 0355Z he landed at Athens, refueled and departed for Dhaharan. At 1410Z (sunset) he landed at Dhaharan and delivered the serum.

The total flight distance was 3,840 miles and entailed 24 hours actual flight time out of 26 hours elapsed time with little preparation possible for the flight.

M. J. REED

COMMANDING OFFICER

VP-HL-6

NAS ARGENTIA

SIRS:

In regard to your answer to C. B. Henrich's letter on my night-fighter "kills" during the war, in the March issue of the *News*, the official record is slightly in error.

1. The plane listed on 21 Sept. 0935 was an *Oscar* not a *Topry* and listed as a probable.

2. The record is incomplete in that I did destroy an *Oscar* south of Canton, China, on 16 Jan. 1945. I don't recall the time but it was a day kill (dusk VF(N) patrol).

Cy Henrich, our night landing signal officer, assumed since the *Independence* considered the two *Bettys* and the *Dinah* night kills (they put the customary black ring around the flag on the side of the ship), that it was official.

The ship's officers' decision to call these night kills must have been based on the fact that it was dark enough to require use of airborne radar to establish initial contact on both the *Bettys* and the *Dinah* and to continue to use it until the visual contact was made.

I recall only that contact in both cases was made by radar at about two miles and the visual contact was a great deal closer, about firing range.

The only question is how dark does it have to get before it is night? I have assumed the score was 6½ night, 3 day and 1 probable day from the manner that the squadron counted them. This, of course, is not official or of much importance, but it explains how Cy Henrich got the idea even though he was one high from the assumed score.

W. E. HENRY, LT. CDR.

PG SCHOOL, ANNAPOLIS

CONTENTS

Navy Neptune	1
Grampaw Pettibone	6
Stalking the Mach	8
See Duty on CVB-41	12
Capturing an Airstrip	13
Wave Stewardesses	16
CL Pilots at Shanghai	18
Reserve Spotlight	20
Orient Roll-Up	22
NANews Visits Miami	23
VT-13	26
World Cruise on CV's	28
Money-Wise	29
Navy Guillotine	31
Fill 'Em Up Again	32
AD-1 Landing Tests	34
Life Raft Radio	34

Did You Know 10, Flight Safety 17, Wing Tips 35, Aviation Ordnance 36, Supply News 37, Service Test 38, Letters 40.

THE COVER

This month's cover picture features a formation shot of P2V-2's from VP-ML-7, operating at present from Quonset Point, R.I. The *Neptune*, the Navy's newest and most heavily-armed patrol plane, is well liked by pilots. Packing six fixed 20 mm. cannon in the nose, plus 16 HVAR rockets under the wings, it is capable of delivering a tremendous offensive punch.

SIRS:

Those airplanes on page 14 of the April issue are SBU-1's, probably of Scouting Two. You can tell they're not from old Scouting Forty-One (my old outfit, Lt. Cdr. J. B. Dunn commanding) because we would have been closed up and in shape! The Marines had a pretty snappy bunch of SBU-1's too.

F. N. HOWE, CDR.

BUAER

* That picture just proves you can't fool a veteran naval aviator. SBU's were monoplanes. Recheck of the "ancient history" file indicates the planes should have been identified as SBU-1's, which were biplanes. Equally sharp eyed were Lt. (jg) J. E. Tilley, vr-5, Seattle; N. A. Haas, ACMM, San Diego; Capt. Henry T. Dietrick, CNO, Washington, D.C.; Lt. (jg) S. C. Connor, Moffett Field; Robert S. Cantrell, San Diego; Lt. (jg) Hal Hughey, Long Beach; and W. H. Ragsdale, USNA, Annapolis.



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STATION INSIGNIA

THIS MONTH we present the insignia of four air stations about the country where Reserve pilots fly. One of the newer ones is at Denver, where the Navy now uses huge Buckley Field. Columbus Reserves have an insignie featuring the galleon of Columbus, discoverer of America. Its black cross sits against a light blue sky. Grosse Ile, home of Reserve fliers in Detroit area, has an insignie complete with flying book, a bomb, lightning and a star marking location of the station. NARTU Norfolk selected a flying eagle and a map of the U.S.





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